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Feasibility and Perceived Efficacy of the Neurosequential Model of Therapeutics

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DISSERTATION

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Dedication

I dedicate this dissertation to the talented and generous clinicians at "the center" who dedicated so much of their time to my research study. I thank you for your participation, your time, and your enthusiasm for the Neurosequential Model of Therapeutics (NMT). This research study would have been impossible without your assistance. I am impressed by your skills, and enthusiastic about your clinical work. I am moved by your dedication to helping children and adolescents who have experienced trauma. May you always be advocates for these children.

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I would like to thank the Child Trauma Academy for permission to use copyrighted images, and I thank Emily Perry, the director of education and training at the Child Trauma Academy, for her kind demeanor and prompt assistance. I truly appreciate it. I would also like to acknowledge the multiple authors whose written work initially inspired me to research children, trauma, and NMT (many of these sources are listed in the reference section of this paper). I hope as time goes on it will be increasingly possible to help children and adolescents heal from complex trauma.

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Abstract

Child abuse and neglect can have serious negative physiological and psychological effects on the developing brain. Children who suffer from early and ongoing abuse and neglect often develop further problems as they mature, even if they are subsequently in safe environments. Many trauma-based therapies have been created in order to help these children develop increased emotional and social regulation, and decrease their behavioral problems. The Neurosequential Model of Therapeutics (NMT) is a newer approach to working with traumatized children that has garnered great enthusiasm despite very limited outcome data. In this dissertation, I explore the promise of NMT and describe a qualitative research project on its use and perceived efficacy in a community mental health agency serving complexly traumatized children and their families. The participants in this research study maintain that NMT has had positive effects on staff and clients. They find this approach to therapy effective, and are enthusiastic about its implementation at their agency. The clinical implication is that NMT may succeed where other trauma-informed approaches fail.

Keywords: child abuse and neglect, effects of trauma, trauma-informed therapy, perceived efficacy of NMT

The Neurosequential Model of Therapeutics

Chapter 1

Child abuse and neglect can have significant, long-lasting negative effects on the developing brain. Trauma can cause serious cognitive, emotional, and physical problems (Cicchetti, 2013). Trauma can cause deficits in social functioning and social-emotional development, as well as place traumatized children more at risk for developing mental health difficulties (Alink, Cicchetti, Kim, & Rogosch, 2012; Courtois & Ford, 2009). In addition, childhood trauma renders children more likely to develop cognitive, emotional, behavioral, academic, health, and legal problems as they become adolescents and adults (Briggs, Thompson, Ostrowski, & Lekwauwa, 2011; Rogosch, Dackis, & Cicchetti, 2011; van der Kolk, 2005). There are many forms of trauma-focused therapies available to mental health professionals; some are empirically supported treatments and others are promising practices (see Appendix A; (National Child Traumatic Stress Network, [NCTSN], 2011). A promising trauma-based approach to working with traumatized children is The Neurosequential Model of Therapeutics (NMT), developed by Dr. Perry and his colleagues at the Child Trauma Academy (Perry, 2009; Perry & Hambrick, 2008). In the following section, I explain why NMT was developed, and what issues it addresses. I examine NMT's potential importance and limitations. Finally, I present the objectives of my research study on NMT.

Statement of the Problem

There is a robust body of literature that indicates that early exposure to abuse and neglect can interrupt healthy neurodevelopment, and cause neuropsychological deficits (Cicchetti, 2013; Perry, 2009). It is also well established that childhood trauma can lead to the manifestation of distressing emotional, psychological, and behavioral symptoms such as depression, anxiety,

impulsivity, affect dysregulation, and aggression (Briggs et al., 2011; Courtois & Ford, 2009; Rogosch et al., 2011). Clinical work done with traumatized children can be slow, difficult, and often, unsuccessful. There are multiple forms of therapy used with abused or neglected children, and there are many empirically supported treatments available to clinicians; Appendix A lists these treatments (NCTSN, 2011). However, these approaches appear to be insufficient to stem the full gamut of negative long-term outcomes including pregnancy, substance abuse, legal charges, serious mental health problems, school failure, and chronic and acute medical conditions (Anda et al., 2006). The clinicians at the Child Trauma Academy (CTA) posit that because these clinical therapies are not informed by the neurobiology of trauma, they tend to lose efficacy (Perry, 2009; Perry & Hambrick, 2008). The clinicians at the Child Trauma Academy have developed an alternative neurodevelopmentally sensitive approach to therapy with traumatized children and adolescents; this approach's focus on neurodevelopment is what sets it apart from other models of therapy that are utilized with traumatized children.

This Neurosequential Model of Therapeutics (NMT) is offered as an alternative mode of engaging in therapeutic work with traumatized children and adolescents. However, there has been limited outcome research on the effectiveness of NMT, and it is currently unclear if NMT is as effective, or more effective, than the forms of therapy already on the NCTSN (2011) list.

Background of the Problem

In America, approximately 695,000 children per year are reported victims of maltreatment, and five children die every day due to abuse and neglect (National Children's Alliance [NCA], 2012); thousands more are unreported. Child abuse and neglect are critical national problems that carry staggering long-term heath, social, psychological, legal, and economic risks (Anda et al., 2006; APA, 2009; Briggs et al., 2011; Perry & Hambrick, 2008).

There is a wealth of research that demonstrates the very serious effects that child abuse and neglect have on the developing brain. In the brains of abused and neglected children, multiple brain areas are underdeveloped (Cicchetti, 2013; De Bellis et al., 2002; Perry, 2009; Perry & Hambrick, 2008; Teicher et al., 2004; van der Kolk, 2005). It is essential that mental health professionals offer the most effective treatments for this population in order to counter the negative and wide-ranging effects caused by abuse and neglect, beginning with a better understanding of the impact of trauma on the developing brain (Perry, 2009). The clinicians at the Child Trauma Academy maintain that NMT may succeed, where other trauma-focused treatments fail, due to its unique focus on neurobiology and neurodevelopment. NMT was created in order to fill the need for a trauma-focused, individually tailored approach to therapy that takes neurobiology and neurodevelopment into account. NMT was developed in the last 20 years and there has not been extensive research on its efficacy (Perry, 2009).

Why Research this Topic?

If research indicates that NMT is an effective approach, it could potentially alter how clinicians work with traumatized children and adolescents. NMT is designed to complement and restructure more traditional therapy with traumatized children. A neurodevelopmentally informed approach could help provide insights and aid clinicians in assessment, training, and intervention strategies (Perry, 2009). Despite two decades of application, research on the NMT program is still in its infancy and preliminary outcome data are inconclusive (Barfield, Dobson, Gaskill, & Perry, 2012).

NMT is currently being implemented in a variety of educational and therapeutic settings, including therapeutic preschools, residential treatment centers, therapeutic foster care, and outpatient mental health settings. There are several projects that further aim to incorporate the

core concepts of NMT into public policy, programs, and practice. These projects focus on adapting NMT strategies for implementation within the child protective system, mental health system, and the juvenile justice system. For example, in 2010 in New Mexico, the Children, Youth, and Families Department introduced NMT into the mental health and child protective systems in a pilot project in Valencia County, New Mexico (Barfield et al., 2012; Perry, 2009). It would be useful to determine NMT's efficacy, especially as NMT is already in use in various settings.

Significance

Untreated, and inadequately treated child trauma is, arguably, the greatest social problem of the 21st century. It is essential for mental health professionals to implement effective forms of therapy with traumatized children to ensure better short- and long-term outcomes. In America, there are millions of children in the educational, child protective, mental health, and juvenile justice systems who have suffered abuse and neglect (Courtois & Ford, 2009; Perry, 2009; van der Kolk, 2005). Most of these children do not receive adequate or appropriate services. Many problematic behaviors of traumatized children, such as aggression and angry outbursts, can be understood as extreme dysregulation; they are unable to regulate their emotional distress. Recent advances in neuroscience have demonstrated a strong link between trauma's impact on the developing brain and this dysregulation (Cicchetti, 2007, 2013; Rogosch, et al., 2011). Sadly, if individuals around these children do not understand the neurobiological basis for problem behavior, then these children are often mislabeled as oppositional, rebellious, unmotivated, or antisocial (Perry, 2009). Abused children often present multiple neurodevelopmental deficits across a wide range of neurological domains (De Bellis et al., 2002; Perry, 2009; Perry & Hambrick, 2008; Teicher et al., 2004; van der Kolk, 2005). These

neurodevelopmental deficits are discussed further in a later section of this paper.

Many therapies that are commonly used with traumatized children and adolescents emphasize the psychosocial effects of abuse and neglect, while ignoring the neurodevelopmental history of the child. Most are insensitive to the fundamental principles of brain organization, development, and function (Perry & Hambrick, 2008). NMT is, by contrast, explicitly a neurodevelopmentally sensitive approach that focuses principally on the child client's neurobiological development and the child's "neuroarchaelogy." NMT maintains that the age at which the infant or child sustained the traumatic experience(s) influences the impact and direction of this trauma, and defines the areas of the brain that will be most affected by it. NMT takes the neurodevelopmental level of the child into account when implementing an intervention (Perry, 2009; Perry & Hambrick, 2008), and the neurodevelopmental level of the child directly informs the nature and type of clinical work that the clinician provides.

In theory, it has long made sense that the neurological impact of early trauma is associated with emotional and behavioral problems. For example, van der Kolk (2005) and the clinicians at the Child Trauma Academy have suggested that more cognitive treatments cannot be effective until the over-reactive lower regions of the brain are soothed and regulated; NMT offers clinicians a mode to achieve this (Perry, 2009; Perry & Hambrick, 2008). Bridging theory about brain development and brain-specific interventions, NMT could potentially aid clinicians in providing more targeted and effective assistance to traumatized children and adolescents.

Objectives of the Study

As discussed previously, NMT is currently used in a variety of settings, including a child and family community health center in New England (Perry, 2009; Perry & Hambrick, 2008). This center has recently become certified in NMT. In my study, I qualitatively examined how

NMT has been effective in this center, and how this was assessed. Through conversations with staff at different levels of the agency, I explored how the experience of integrating NMT with an empirically supported model of therapy (i.e., Attachment, Self-Regulation, and Competency: ARC), has been for the mental health professionals working at this center. I was particularly interested in learning what staff expectations for NMT were, what has been effective about NMT, and what, if anything, has been challenging or problematic in its implementation.

Theoretical Framework: Interpretative Phenomenological Analysis

I used Interpretative Phenomenological Analysis (IPA) as the theoretical framework for my qualitative research study. IPA is a qualitative research approach that permits the researcher to examine how individuals make sense of their experiences. IPA is based on the three theoretical perspectives of phenomenology, hermeneutics, and idiography (Mertens, 2010; Smith, Flowers, & Larkin, 2009). IPA is primarily concerned with comprehending how the interviewee makes sense of his or her individual experience. The IPA researcher engages in a double hermeneutic and interprets the interviewee's description of his or her distinct, individual experience. IPA allows the researcher to understand the interviewee's individual experience of a particular phenomenon. The IPA researcher then interprets it and makes sense of it. Data collection in IPA usually consists of semi-structured interviews that are then analyzed, case-by-case, for emergent and superordinate themes (Mertens, 2010; Smith et al., 2009).

In my study, I focused on how the mental health professionals at the center make sense of their experience of using NMT. I explored the personal experiences of each mental health professional that I interviewed. I sought to understand what their expectation and experience of NMT was in their clinical work. After obtaining these mental health professionals' interviews, I then carefully analyzed their interviews for emergent and superordinate themes, and produced a

narrative account of my subsequent analytic interpretation. I supported this narrative with selected verbatim comments from the mental health professionals I interviewed at the mental health center, as well as a case example (Mertens, 2010; Smith et al., 2009). These data are discussed in terms of the promise and reality of NMT as an effective intervention with traumatized children and families. The themes that emerged from this qualitative study indicated the clinicians' impressions of NMT's overall effectiveness with their clients. This qualitative study provides information on the utility and effectiveness of NMT.

Summary

NMT was developed to meet the need for a neurodevelopmentally sensitive trauma treatment that might better combat the potentially devastating, wide-ranging, and long-term effects of child maltreatment. NMT may potentially become a promising model of treatment for traumatized, abused, and neglected children, but data supporting its efficacy are insufficient. This qualitative study yields increased clinical insight into how useful and effective this interesting trauma treatment approach may be.

Chapter 2

Review of the Literature

Child abuse and neglect have devastating effects on the developing brain. Children who have suffered from child abuse or neglect often develop serious physiological and psychological issues (APA, 2009; Briggs et. al, 2011; van der Kolk, 2005). These children are also at risk for becoming involved in academic, social, and legal problems. Developmental trauma disorder theory and diagnosis provide a useful label, and a way to conceptualize, integrate, and explain the many difficulties these traumatized children manifest (van der Kolk, 2005). Developmental trauma disorder theory and diagnosis are discussed further in a later section of this paper. There are currently many empirically supported treatments that can be utilized with traumatized children (see Appendix A for an extensive list). An especially effective treatment is Attachment Self-Regulation and Competency (ARC) that is used and recommended by the clinicians at the Trauma Center (Blaustein & Kinniburgh, 2010; NCTSN, 2011). ARC has been shown to help reduce problematic behaviors in children suffering from PTSD as well as increase rates of permanency in adoptive children (Arvidson et al., 2011; Ford et al., 2013). Both NMT and ARC share a developmental trauma lens, although each emphasizes different elements in its approach. All therapeutic approaches have benefits and limitations, and NMT is no different. As I gathered information on NMT's perceived efficacy and feasibility, I explored NMT's benefits and limitations.

Child Abuse and Neglect in America

In America, in 2010, approximately 1,560 children died due to abuse and neglect. Of these reported cases of child fatality, almost 80% were caused by neglect or abuse on the part of one or more of the child victim's parents (NCA, 2011). Children under one year of age are

victimized most often, with a rate of 20.6 per 1,000 children in the population of the same age. Among the 259,000 children seen by Children's Advocacy Centers in America in 2011, 106,552 were children whose ages ranged from 0-6 years. Children's Advocacy Centers served 99,624 children between the ages of 7-12, and 69,372 children between the ages of 13-18 (NCA, 2011). Of the children served, 187,862 reported sexual abuse, 48,264 reported physical abuse, and 179,014 children participated in forensic interviewing at a Children's Advocacy Center. In 2010, over 78% of all children seen experienced neglect. More than 17% were physically abused, approximately 10% were sexually abused, 5% were psychologically maltreated, 2% were medically maltreated, and 10% experienced other forms of maltreatment. Approximately 3.7 million children received preventative services from Child Protective Services agencies in 47 states in 2010 (NCA, 2011). Even with these large numbers of reported cases, it is still widely understood that only a small fraction of abused and neglected children are identified and treated (APA, 2009).

Most child victims know their abuser. Children are most often physically abused by a parent, and are most often sexually abused by someone they know, including parents (APA, 2009). Research demonstrates that one-third to two thirds of child maltreatment cases involve substance abuse. Some other common factors of abusive and neglectful parents include inadequate parenting skills, high stress levels, low education level, and a lack of knowledge of child development. Half of the families referred to Child Protective Services receive or have received welfare assistance (APA, 2009). The intergenerational transmission theory has some support; a history of child abuse is often, but not always, associated with abusive and neglectful parenting practices (Doumas, Margolin, & John, 1994). Unlike other types of trauma, child abuse and neglect tend to include multiple simultaneous and sequential adverse experiences. It is

significant that most children are harmed, over time, in a variety of ways— seldom by a single traumatic event (Courtois & Ford, 2009; van der Kolk, 2005). It is also important to note that child abuse is relational trauma; the adults upon whom the child relies on for protection and nurturing are unavailable or unsafe. Disrupted attachment in children interferes with healthy brain development (Siegel, 1999), and has a myriad of negative consequences (Cook et al., 2005).

The consequences of child abuse and neglect are multiple and significant. The effects can be short-term and long-term, and physical, emotional, psychological, and behavioral functioning can all be impaired (APA, 2009; Briggs et al., 2011; Cicchetti, 2007, 2013; Perry, 2009). Mental health issues resulting from child abuse and neglect include depression, anxiety, post-traumatic stress disorder, dissociative disorders, suicidal ideation, and substance abuse (Anda et al., 2006; van der Kolk, 2005). Child abuse and neglect can have direct effects on a child's physical, cognitive, affective, emotional, and social development (Rogosch et al., 2011). It is essential to identify child abuse and neglect quickly and provide tailored supports in order to limit potential damage (APA, 2009; Perry, 2009).

Trauma and Brain Development

Trauma can have devastating effects on the developing brain of a child because the brain develops in response to both internal and external stimuli. Brain cell formation occurs mostly before birth; however, neuronal networks are formed through repeated electrical activity. At birth, the brain of a child has many more neurons than it requires, and as the child grows, the brain becomes more efficient and streamlined as it eliminates and prunes the excessive neurons. Neuronal networks are formed and strengthened in response to repeated activity. This electrical activity strengthens some connections between neurons, and these connections are retained.

Other connections, not strengthened by electrical activity, atrophy and vanish over time (Carter, 2009; Perry, 2009; Siegel, 1999). Babies are born with the foundation for a working brain; genetics is responsible for basic neuronal networks. However, during the first years of life, these neuronal connections increase 20 times; experience helps to shape these connections, and to hard-wire them. Early experiences are critical to brain development because in the first four years of life, the brain forms the majority of its structures and connections, and then refines itself over time (Carter, 2009; Perry, 2009; Siegel, 1999). The neuronal capacity to respond to internal and external environments is adaptive, allowing the organism to adjust and survive.

When children are developing, their brains adapt to internal and external stimuli, and their brains organize themselves accordingly. The environment affects the quantity and quality of synapses formed and maintained. Experience serves to reinforce neuronal networks, and the networks eventually come to be templates and filters for later experience (Carter, 2009; Perry, 2009; Siegel, 1999). "Experience... creates a processing template [neuronal networks] through which all new input is filtered" (Perry, Pollard, Blakly, Baker, & Vigilante, 1995, p. 275). In addition, the brain develops in a hierarchical fashion, with the regulatory areas of the brain, the brainstem and diencephalon (thalamus, hypothalamus, subthalamus, and epithalamus) forming first, and the higher more complex regions, the limbic and cortex, developing over the next 26 years (Carter, 2009; Perry, 2009; Siegel, 1999).

The brain is at its most vulnerable when the child is young. A developing brain has significant plasticity as it is forming neuronal networks, and is strongly affected by activity and experience, both positive and negative. Trauma during the early childhood years can therefore have significant effects (Courtois & Ford, 2009). However, neuroplasticity also means that the developing brain can heal more readily during this time (Perry, 2009; Perry & Hambrick, 2008).

See Appendix B for visual images of the brain; these images of brains in healthy and abused children are included so that a visual comparison can be made.

The Physiological and Psychological Effects of Trauma

Trauma has significant effects on the developing brain. Children who have suffered abuse and neglect often have affected brain structures and functions, and consequently develop physiological and psychological issues (Cicchetti, 2013; Cook et al., 2005; Perry, 2009; van der Kolk, 2005).

The Effect of Trauma on the Brain

Abused and neglected children often have smaller and underdeveloped brain structures (Carrion et al., 2001; De Bellis et al., 2002). There is research using fMRI technology that demonstrates that abused or neglected children have smaller brains overall (Carrion et al., 2001), smaller cerebellums (De Bellis & Kuchibhatla, 2006) and that areas of mistreated children's corpus callosi are smaller than those of children who are not maltreated (De Bellis et al., 2002; Kitayama et al., 2007; Teicher et al., 2004). Children who suffer from abuse and neglect have smaller prefrontal, cerebral, and intracranial cortex, and smaller right temporal lobes (De Bellis et al., 2002). Abused and neglected children have a reduced anterior cingulate cortex (Cohen et al., 2006; Kitayama et al., 2007). The caudate nuclei in individuals who experienced significant early life stress were 2-5% smaller than in individuals who had only experienced minimal early life stress (Cohen et al., 2006).

Although PTSD in adults is associated with decreased hippocampal volume, this does not seem to be the case for maltreated children (Carrion et al., 2001; Cohen et al., 2006; De Bellis, Hall, Boring, Frustaci, & Moritz, 2001). There are, however, varied results from studies that measure the effects of PTSD and /or maltreatment on hippocampal volume. One hypothesis for

this diverging evidence is that stress-induced hippocampal damage may not be apparent until after puberty. Another hypothesis is that on-going neurogenesis in the hippocampal area may compensate for damage due to maltreatment in childhood (De Bellis et al., 2001). Overall, it is quite evident that maltreatment leads to adverse brain development and functioning across all structures (Anda et al., 2006; De Bellis et al., 2002; Perry, 2009; Perry & Hambrick, 2008; Teicher et al., 2004; van der Kolk, 2005).

Effect of Trauma on the Sympathetic Nervous System

There is research that demonstrates that abused and neglected individuals experience dysregulation in their sympathetic nervous systems (Perry, 2009; van der Kolk, 2005). Children who have been abused or neglected have higher resting heart rates (Anda et al., 2006). If a child experiences fear chronically early in her life, it can alter biological stress systems, the hypothalamic-pituitary-adrenal (HPA) stress response system, which in turn alters neuroendocrine hormone levels, alters levels of catecholamines (e.g., norepinephrine and epinephrine), and alters levels of the stress-regulating hormone cortisol (Cicchetti, 2007; De Bellis et al., 1999; Ford, 2005; Rogosch et al., 2011). A child with an altered biological stress system is more likely to have a sympathetic nervous system frequently activated by stimuli. In addition, if a child is in a state of fear-related dissociation or hyperarousal, then the child's limbic and cortex systems are chronically compromised, decreasing their functioning (Perry, 2009; Siegel, 1999; van der Kolk, 2005). Trauma activates the lower regions of children's brains, and over time causes these areas of the brain to be overreactive. Trauma reduces the cortex's ability to control these activated lower regions of the brain, and it creates an imbalance between the cognitive and emotional systems. Indeed, trauma reduces cohesive brain functioning overall (Perry, 2009).

The Clinical Presentation of a Traumatized Brain

With compromised functioning in so many areas of the brain, the traumatized child has greater difficulty learning in school and in life. When areas of the brain are impaired or underdeveloped, the result can be difficulty with abstract or rational thinking, as well as difficulty processing memories and emotions (Ford, 2005; Perry, 2009; van der Kolk, 2005). Children with smaller prefrontal, cerebral, and intracranial cortex will most likely have trouble with inhibition, organization, attention, judgment, and integration of information (Carter, 2009; Lezak, 2004). Children with smaller right temporal lobes may have difficulty with memory and language (Lezak, 2004), specifically recognizing tone, stress, intonation, and gestures (Carter, 2009).

Reduction of corpus callosi leads to a loss of integration between hemispheres (Lezak, 2004). Therefore integration of sensory, emotional, and cognitive information is more difficult for the brain of a maltreated child. Children with smaller cerebellums than their peers may struggle with motor control and equilibrium, as well as autonomic regulation, and possibly anxiety disorders (De Bellis & Kuchibhatla, 2006). Children with an underdeveloped caudate nucleus find self-regulation challenging, as the caudate nucleus helps to mediate the stress response and regulate emotion (Cohen et al., 2006; Kitayama et al., 2007). Reduced volume in the anterior cingulate cortex leads to emotional dysregulation and decrease in motivation, and it is also involved in pain perception (Carter 2009; Lezak, 2004); a decrease in volume of this area may lead to a possible decrease in attention to the emotional significance of pain (Carter 2009). In addition, changes in the production of essential neurotransmitters such as norepinephrine, dopamine, and serotonin have a deleterious impact on the child's mood and behavior, making it challenging for the child to modulate his fight or flight impulse, or to self-regulate (Perry, 2009;

Siegel, 1999; van der Kolk, 2005).

Repeated trauma over the early years can interfere with neurobiological development, and the integration of cognitive, emotional, and sensory information (Coutois & Ford, 2009; Perry, 2009). Children who have experienced chronic trauma often have difficulty self-regulating. They struggle to control affect, aggression, attention, and impulses. These children tend to have trouble learning in school. They often are suspicious of others and have difficulty forming attachments (Cook et al., 2005; Coutois & Ford, 2009; Perry, 2009). These difficulties often lead to social isolation, which in turn increases their tendency to avoid others and isolate themselves further (van der Kolk, 2005). These children have additional developmental burdens establishing coherent identity, and often do not experience a continuous sense of self (Cook et al., 2005; Courtois & Ford, 2009). Children who have experienced trauma frequently struggle with moral development, as well as cognitive and emotional flexibility (van der Kolk, 2005). These children may have sensorimotor difficulties and problems with sensory integration. In addition, many children who have experienced trauma suffer from flashbacks, dissociation, depersonalization, amnesia, and nightmares, often long after the trauma has ceased (Perry, 2009; van der Kolk, 2005).

Long-term data clearly indicate that untreated child trauma has enduring consequences. Research has shown that children who experience negative and traumatic events often develop serious physical and/or psychological problems as they become adults (Cook et al., 2005; Courtois & Ford, 2009). Childhood abuse or neglect is highly correlated with adult depression, suicidality, substance abuse, sexual promiscuity, sexually transmitted diseases, obesity, physical inactivity, and cigarette smoking (Anda et al., 2006; van der Kolk, 2005). Abuse and neglect are correlated with high rates of arrest for violence at an early age (van Dalen, 2001).

Anda et al. (2006) draw significant evidence for serious and long-lasting negative effects of child abuse and neglect from the Adverse Childhood Experiences (ACE) Study. The ACE Study was comprised of 17,337 adults who had suffered from adverse childhood experiences such as abuse, neglect, witnessing domestic violence, or experiencing significant household dysfunction. The higher the ACE score that these adults received, the more childhood stress and distress they had experienced. High ACE scores were correlated with depressive disorders, anxiety disorders, and substance abuse, along with a host of chronic and acute physical illnesses. As ACE scores rose, so did the level of comorbidity, and psychiatric or physical symptoms. Developmental trauma is a serious problem with multiple and wide-ranging negative effects over the lifespan (Anda et al., 2006; Courtois & Ford, 2009; van der Kolk, 2005).

Complex Trauma in Children

Complex trauma occurs when an individual is repeatedly exposed to stressors during a vulnerable developmental period, such as early childhood. The abuse, neglect, or abandonment occurs at the hands of caregivers or other trusted adults, and the trauma can significantly interfere with the child's general development (Courtois & Ford, 2009). Complex traumatic stress disorders occur as a result of complex trauma, and in their manifestation, they often encompass a range of psychological disorders and health issues, as well as relational and environmental difficulties. The psychological, emotional, and somatic effects of complex trauma in children are varied, and as a result, it can be difficult to apply an accurate diagnosis to children with complex trauma (Courtois & Ford, 2009).

Developmental Trauma Disorder

Bessel van der Kolk (2005), who comprehensively studied children and trauma, observed that many children who experienced traumatic events did not meet the criteria for a DSM-IV

diagnosis of Posttraumatic Stress Disorder (PTSD). Van der Kolk (2005) observed that the most common diagnoses given to these children were phobic disorders, anxiety disorders, separation anxiety disorder, oppositional defiant disorder, and PTSD. He noted that these children also frequently experienced problems with physical regulation of sleep, nutrition, and self-care (van der Kolk, 2005). Traumatized children frequently also had somatic problems that ranged from chronic headaches or stomachaches to gastrointestinal difficulties. Van der Kolk (2005) observed that children who suffered from trauma manifested self-hatred, self-blame, and a lack of awareness of danger, which often led to repeated endangering activities. He observed that they tend to reenact their trauma histories either as an aggressor or in "frozen avoidance reactions" (van der Kolk, 2005, p. 6). These children seek to regulate intense emotions such as rage, shame, fear, or defeat through reenactments; they strive to reduce objective threat and control their distress. If the individuals around these children do not understand the source and purpose of these reenactments, these children can be mislabeled as being oppositional, defiant, rebellious, antisocial, or unmotivated (van der Kolk, 2005).

Though ultimately unsuccessful, van der Kolk (2005) developed a diagnosis for the fifth iteration of the DSM that accounted for the multiple symptoms that he observed in children who had suffered from complex trauma (e.g., difficulty with attention, memory, self-regulation, aggression, attaching to others, social isolation, negative self-esteem, self-control, impulsivity, delaying gratification, as well as the physical problems associated with sleep, nutrition, and self-care). Van der Kolk (2005) and The Complex Trauma taskforce of the National Child Traumatic Stress Network describe a more precise diagnosis than PTSD, one that encompasses the interpersonal and developmental impact of child abuse. Van der Kolk (2005) called this comprehensive diagnosis, *Developmental Trauma Disorder* (DTD). Despite compelling

empirical evidence to support it, DTD was not included in the DSM-5; however, it still provides a very useful and categorical description of these children, with a very thorough evidence base (Cook et al., 2005; Courtois & Ford, 2009; Ford, 2005; van der Kolk, 2005).

This diagnosis emphasizes that traumatized children become easily triggered and dysregulated, and have great difficulty returning to homeostasis afterward. They are dysregulated across systems, and often over- or under-reactive on physical, emotional, psychological, cognitive, and interpersonal levels (Cook et al., 2005; Courtois & Ford, 2009; van der Kolk, 2005). They engage in stimulus generalization, and organize their behavior in an anticipatory attempt to avoid or prevent further trauma (van der Kolk, 2005). Children who have experienced complex trauma develop conditioned responses to triggers; they become wired to anticipate that their trauma will reoccur. As a result, they may react with aggression, defeat, freezing, or hyperactivity. These childen may be excessively compliant, clingy, oppositional, or suspicious as a result of their trauma histories. They are continually activated and aroused. Consequently, they often misinterpret ambiguous interpersonal interactions with a bias toward malevolent intent. Novel situations and individuals are often threatening to them (Courtois & Ford, 2009; Perry, 2009; van der Kolk, 2005).

Given so many severe effects across so many domains of functioning, therapy with traumatized children is often difficult for therapists and children alike. These children have great difficulty forming and trusting attachments that might help them lower their levels of arousal and hypervigilance, and they struggle to focus their attention and learn new ways of living in the world. This constellation of regulatory and interpersonal difficulties makes them uniquely challenging to treat. It is notable, therefore, that many fine, evidence-based and empirically supported models of treatment have been developed.

Empirically Supported Treatments for Abused and Neglected Children

Many empirically supported trauma-based therapies, promising practices and interventions are currently available for treating child victims of abuse and neglect. There is a list of these treatments on The National Child Traumatic Stress Network (NCTSN) webpage (see Appendix A).

Many of these interventions contain similar components such as screening, triage, psychoeducation, promotion of safety skills, and helping the child tell an organized and meaningful story about the trauma. Most emphasize enhancing the child's emotional regulation and adaptive coping, addressing grief and loss, and promoting anxiety management skills (Courtois & Ford, 2009; NCTSN, 2011). Other common components include parenting skills, behavioral management, relapse prevention, and evaluation of barriers to service-seeking (NCTSN, 2011).

One of the most widely used and interesting approaches, Attachment, Self-Regulation, and Competency (ARC), encompasses all of these salient features. In this study, I dedicate attention primarily to descriptions of ARC and NMT because the center where I conducted my qualitative research had recently integrated NMT into their clinical work; some of their staff utilizes ARC, some utilize NMT, some utilize ARC and NMT together, and some integrate NMT with other approaches.

Attachment, Self-Regulation, and Competency

ARC is a theoretically informed and evidence-based intervention protocol designed to be used with complexly traumatized children and adolescents. ARC has its roots in attachment theory, child development, traumatic stress impact, and promotion of resiliency factors (Blaustein & Kinniburgh, 2010; NCTSN, 2011). ARC interventions focus on change within

three domains: (a) attachment, (b) regulation, and (c) competency. These three domains are each divided into 10 core targets or *building blocks*, which are then further reduced into key subskills. The domain of attachment is divided into the building blocks of attunement, caregiver affect management, consistent response, and routines and rituals. The domain of self-regulation is divided into the building blocks of affect identification, modulation, and affect expression. The domain of competency is made up of executive functions, self-development and identity, and trauma experience integration (Blaustein & Kinniburgh, 2010).

ARC is a flexible approach to working with traumatized youth. The protocol is individualized, and can be adapted to the needs of the specific child, family, and related systems. The ARC framework emphasizes cultural sensitivity and focuses on each individual client's therapeutic needs. ARC has been used widely in various treatment settings including residential, outpatient, inpatient, early intervention, group homes, foster care, and juvenile justice. There is research that supports the efficacy of this form of treatment (Arvidson, 2011; Ford et al., 2013; NCTSN, 2011). ARC is promoted and disseminated by trauma specialists at the Trauma Center in Brookline, MA (Blaustein & Kinniburgh, 2010; NCTSN, 2011).

ARC is included in the NCTSN list of empirically supported treatments and promising practices. Pilot trials and feasibility trials have been conducted on ARC, as part of a SAMHSA NCTSI project cycle. Outcome research on ARC has also been conducted, and the results are positive. In one study, there was a 50% reduction in PTSD symptoms as measured by the Clinician Administered PTSD Scale-Child Version, and reductions on nearly all the subscales of the Trauma Symptom Checklist (NCTSN, 2011).

Training in ARC consists of an initial two-day training session, and then bi-weekly or monthly follow-up consultation via telephone or email, as needed. In addition, there are one to

two advanced follow-up trainings, lasting one to two days each, that are completed on site. The cost of training depends on the size of the group. The base rate is $6,000 plus travel costs for the initial two day training, with a maximum of 20 participants. Larger groups tend to pay less for training. Follow-up telephone consultation costs $200 per hour (NCTSN, 2011).

The Neurosequential Model of Therapeutics (NMT)

Another therapeutic approach to treating maltreated children has emerged in the last 20 years. NMT was created by Dr. Perry and his colleagues at the Child Trauma Academy (CTA), a non-profit organization based in Texas. Although NMT is not listed on the NCTSN webpage or the APA webpage as an empirically supported treatment or promising practice for abused and neglected children, it is an emerging approach that enjoys increasing popularity both in America, and internationally. NMT is currently utilized in multiple locations including residential treatment settings, therapeutic pre-schools, and outpatient mental health settings (CTA, 2011). It is estimated that more than 50 mental health organizations are currently utilizing NMT, and more than 100 sites and individuals are in the process of being trained in NMT. It is estimated that the quantity of individuals who have received NMT assessments will arrive at 15,000 in the next few years, and there are reportedly more than 4,000 individuals in the NMT database (Perry & Dobson, 2013).

What is NMT?

NMT is a developmentally sensitive, neurobiologically informed approach to working therapeutically with children. NMT is not a form of therapy or a specific intervention or technique; rather it is an approach to clinical work with at-risk children (CTA, 2011; Perry & Hambrick, 2008). NMT is a "multidimentional assessment lens" (Perry & Dobson, 2013, p. 250) used to determine a child client's neurodevelopmental strengths and weaknesses. NMT

clinicians select interventions based on the child's neurodevelopmental history and current presentation (Perry & Dobson, 2013).

How is NMT Used?

Different brain systems develop at different points during childhood, and NMT clinicians must first estimate which neural networks and functions were affected by a child's developmental challenges. For example, earlier interactions with an impaired and/or inattentive caregiver will affect the norepinephrine, dopamine, and serotonin systems in the child's brainstem and diencephalon (Perry & Hambrick, 2008), which in turn may affect the child's mood and ability to self-regulate. Perry and Hambrick maintain that the brain is an historical organ, and the NMT Core Assessment is essential in order to track the neurobiological development of abused and traumatized children. Therefore this approach involves a thorough assessment of the child's primary problems, key strengths, and developmental history, including the primary insults, challenges, and sources of stress present in the child's life, from in utero to the present (Perry & Hambrick, 2008; Perry & Dobson, 2013).

When NMT clinicians conduct an NMT Functional Review, they seek to determine a child's comprehensive developmental history and current status, and then they develop recommendations that are appropriate for the child's neurodevelopmental level (Perry & Dobson, 2013). Clinicians consult with caregivers, preferably the child's biological or foster parents, or a DCF worker if parents or family are not involved in the child's life. Clinicians conduct a semi-structured interview regarding the child's past and current levels of functioning. When exploring a child's developmental history, NMT clinicians seek to ascertain the nature, severity, and pattern of adverse events that occurred to the child, from in utero to the present (Perry & Hambrick, 2008). NMT clinicians ask parents questions such as: (a) What was your family like?

(b) How were you raised? (c) Is there a history of mental illness in your family? (d) Was this a wanted pregnancy? (e) Was this child's mother safe during the pregnancy? (f) Were there stressful events that occurred during pregnancy? (g) Any use of drugs or alcohol during the pregnancy? Clinicians gather as much detailed information as possible about a child's exposure to adverse events and positive relationships.

NMT clinicians examine the child's bonding and attachment history, and they discover which family, peer, school, and community supports were available to the child. They ask specific questions regarding who spent time with the child, how often, engaging in what activities, as well as questions regarding relational trauma (e.g., sexual abuse, emotional abuse, emotional neglect). The child's brain develops in response to its internal and external environments; the majority of brain development occurs during the first four years of life (Carter, 2009; Perry & Hambrick, 2008). Early experiences and interactions with caregivers can greatly influence the development of a child. The timing of traumatic experience affects the quality and direction of neurobiological and neuropsychological development. For example, if a child has continually felt threatened, her brain will eventually become programmed into existing in a chronic state of fear (Perry & Hambrick, 2008). A child who has received consistent, predictable, nurturing experiences is more neurobiologically resilient than a child who has not. A child with inconsistent caregiving is much more vulnerable to developing significant problems in varied domains of functioning (Perry & Hambrick, 2008).

Clinicians assign adverse events, relational health, and developmental risk scores to the child based on their estimations of the quantity, quality, and impact of stress, trauma, and attachment in a child's life, and the subsequent developmental risk (Perry & Dobson, 2013). It is necessary to determine what earlier developmental challenges and relationships result in risk or

resiliency for the child in order to understand a child's past and present functioning in muliple domains (Perry & Hambrick, 2008). If there is a dearth of available information on a child's developmental history, NMT clinicians are advised to be conservative when reconstructing the early history; so that the level of developmental risk, which is calculated considering both adverse events and past relational health, is underestimated rather than overestimated (Perry & Dobson, 2013).

NMT clinicians also determine which family, peer, school, and community supports are currently available to the child. The clinicians then estimate the child's "central nervous system functional status measure (CNS)" (Perry & Dobson, 2013, p. 255) based on their estimations of the child's neurodevelopment in the following brain areas: (a) brainstem, (b) diencephalon/cerebellum, (c) limbic system, (d) cortex/frontal cortex (Perry & Dobson, 2013). A child may receive scores ranging from 1 to 12, with 1 indicating severe dysfunction and 12 representing healthy development. These scores, and all other scores, are determined based on information gathered during the initial semi-structured interview with caregivers.

There are four principle charts or graphs that are created during the NMT assessment: (a) the Developmental History graph, (b) the Developmental Risk graph, (c) the Functional Brain Map, and (d) the Current Functional Domains Values graph. These visual representations comprise the NMT Metric (Perry & Dobson, 2013). First, the Developmental History and Developmental Risk charts are created using developmental history values. The adverse events and relational health of the child during the intrauterine period, the perinatal period, infancy, early childhood, and childhood are reduced into an adverse events score, a relational health score, and a developmental risk score. The adverse events score and the relational health score

are plotted onto a Developmental History graph. The developmental risk score is plotted onto a Developmental Risk graph (see Appendix C; (Perry & Dobson, 2013).

Second, the child's current CNS functionality is listed for each brain area (e.g., brainstem, frontal cortex) and then transposed onto a Functional Brain Map. The Functional Brain Map is a visual representation of clinicians' estimates of the child's neurodevelopmental level in multiple brain areas: (a) the brainstem, (b) diencephalon/cerebellum, (c) limbic system, (d) cortex/frontal cortex (see Appendix C). In addition, data collected from quantitative measures, such as the Weschler Intelligence Scale for Children (WISC), and qualitative measures, such as direct observation and interview, are also considered when NMT clinicians estimate a child's CNS Functionality scores, which are then transposed onto the Functional Brain Map (Perry & Dobson, 2013). For example, if a child's verbal comprehension score on the WISC is below the expected level for a child with his same age and education level, then this weakness is considered when an NMT clinician estimates a score for the child's ability to read and use verbal skills.

The Functional Brain Map serves as a visual representation of the child's developmental levels in multiple domains such as speech and language capability, social skills, self-regulation, arousal continuum, dissociation continuum, appetite, sleep, attention, and attunement (Perry & Dobson, 2013). Within this mapping, it is possible to describe great developmental variation. For example, a child may be 11 years old and have the speech and language skills of a nine-year old, the social skills of a six-year-old, and self-regulation skills of a four-year-old (Perry & Hambrick, 2008). The functional scores on the Functional Brain Map are color-coded. Red or pink correspond to scores 1-4, indicating severe dysfunction or underdeveloped function. Yellow corresponds to scores 5-8, indicating moderate dysfunction to mild compromise. Green

shades correspond with scores 9-12 indicating emerging or developed function (see Appendix C; (Perry & Dobson, 2013).

Third, a graph is created using the child's Current Functional Domains Values. The child receives scores in sensory integration, self-regulation, relational, and cognitive functioning. These scores are plotted onto a graph where they are compared to the scores of an age typical child. Scores may range from 0 (indicating severe dysfunction in a domain) to 100, which indicates full development in a domain (see Appendix C). Another important aspect of the NMT assessment is the Cortical Modulation Ratio (CMR). This ratio represents the ability of the child to use cortical networks to modulate lower networks in the brain, and self-regulate. The ratio is derived by examining the child's sensory integration, self-regulation, relational, and cognitive scores (see Appendix C) (Perry & Dobson, 2013). A child with very low self-regulation and relational scores, a low cognitive score, and a higher sensory integration score will most likely have difficulty using higher networks in the brain (i.e., frontal cortex) to modulate lower networks (i.e., limbic system), resulting in affect dysregulation, attachment and relational difficulties. "Any Cortical Modulation Ratio below 1.0 suggests that the individual has minimal capacity to self-regulate. Ratios between 1.0 and 2.0 indicate emerging but episodic self-regulation capacity" (Perry & Dobson, 2013, p. 3). As mentioned previously, all scores are estimated based on the information that is gathered by the NMT clinician from the interview with the child's caregivers. Clinicians' estimates are entered into a matrix which then generates final scores for the child based on an algorithm.

An intensive part of NMT assessment training is learning how to estimate adverse events scores, relational health scores, CNS functionality scores, and current functional domain values for the child being assessed. As part of the accreditation process, NMT clinicians initially

observe Dr. Perry estimate scores for case examples. Then, over time, clinicians are provided with case examples and they estimate scores for the child. Dr. Perry monitors this process and makes corrections when necessary. After clinicians complete this phase of training, they are permitted to act independently. Accredited NMT clinicians participate in a fidelity exercise twice a year.

The Functional Brain Map (as well as the other charts) can be very useful when following the progress of a child over time, and when discussing rationale for interventions and recommendations with mental health professionals, caregivers, educators, and clients (Perry & Hambrick, 2008). The interventions selected by the NMT clinicians involve activities aimed at increasing the child's sensory integration, self-regulation, relational interaction, and cognitive functioning (Perry & Dobson, 2013). These NMT interventions are classified as essential, therapeutic, or enrichment. When a child's functional score is below 65% of the age-typical score in any domain (e.g., sensory integration) then a recommendation to help the child's growth in this area is considered essential. If a child's score is between 65% and 85%, then the recommendation is considered therapeutic, and if the child's score is at 85% or above, then the recommendation is considered enrichment (Perry & Dobson, 2013).

Two Essential Tenets of NMT

NMT tailors the mode of the intervention to the developmental stage of the child, and to the area of the brain and neuronal networks involved in the presenting problem. In order to better comprehend how NMT works, it is essential to understand its two main tenets.

The brain develops in a hierarchal manner. The brain develops in a hierarchal manner, and follows a bottom-up structure (Carter, 2009; Perry, 2009). Simpler structures such as the brainstem and the diencephelon, which control heart rate, respiration, and blood pressure,

develop before more complex structures. The limbic and cortex regions, which control emotional regulation and cognition respectively, develop subsequently. Neural networks connect areas of the brain and allow for communication and interaction among these brain regions. Proper development of the limbic and cortical regions of the brain depends on full development of the lower brain regions (Carter, 2009; Perry, 2009). All sensory information passes through the lower brain structures before it continues on to more complex regions. Notably, threat assessment occurs initially in these lower brain structures. If the sensory input is associated with previous threat, then the state of arousal begins to shift; the brainstem and mid-brain respond almost immediately to the perceived threat. Often the threat response is almost reflexive, and the response may occur well before input on the threat has reached the cortical level of the brain, where it can be examined (Carter, 2009; Perry, 2009). The brain's ability to create associations and respond to threat by way of precortical processing is at the core of trauma symptoms. These precortical associations complicate more traditional therapeutic work, as the child in a fearful state will not be able to respond to verbal, cognitive, or interpersonal interventions (Perry, 2009).

The "use-dependent" nature of neurons and neural networks. Brain development consists of wiring and rewiring the connections made between neurons (Carter, 2009; Perry et al., 1995). Bursts of electrical activity strengthen some of these connections, and the connections that are not reinforced through repeated use are pruned away. Neurons are designed to respond to external signals. The environment affects the quantity of neurons and synapses, and the way these synapses are wired. Activity and experience serve to reinforce neural pathways and networks. These networks become templates and filters for later experience (Carter, 2009; Perry et al., 1995). All areas of the brain are "use-dependent." Healthy development depends on the pattern, frequency, and timing of experiences (LeDoux, 2002; Perry, 2009; Siegel, 1999).

Chaotic, inconsistent, and fearful experiences will lead to continued activation of the child's stress response. In order to change the neural pathways in traumatized children, repetition and consistency are vital in treatment (Perry, 2009). The neural networks involved in creating the symptoms must be directly involved in the treatment. In NMT, the therapeutic interventions are designed to match the affected area of the brain. Interventions that seek to alter the earliest trauma-related symptoms must target the brainstem, where the threat response neural systems originate. Perry (2009) believes that interventions that target higher levels of brain functioning will not be successful until the brainstem is regulated.

Tailoring the Interventions to the Brain

Due to the sequential and hierarchical development of the brain, if the child's brainstem is not regulated, then it is impossible to expect higher levels of the brain to be regulated. The NMT Functional Brain Map allows the clinician to focus interventions, and target, in developmental order, the compromised areas of the brain. NMT clinicians seek to regulate the brains of traumatized children from the bottom up, starting with the lowest, underdeveloped or dysfunctional area of the brain– the brain stem– and working upwards to higher brain structures, ending with the cortex (Perry, 2009; Perry & Hambrick, 2008). If a child's brainstem and diencephalon are poorly organized, higher more complex areas of the brain cannot function well either; it is likely that this child will experience difficulty with self-regulation, attention, arousal, and impulsivity. For these children, NMT recommends repetitive somatosensory activity such as yoga, drumming, music, breathing, and movement in order to reprogram the brainstem and diencephalon. These activities provide the brainstem and diencephalon with sufficient somatosensory repetition and consistency so that these areas of the brain can reorganize themselves over time (Perry, 2009; Perry & Hambrick, 2008).

When the brainstem and diencephalon are regulated and organized, then the clinician can target higher structures in the brain, such as the limbic system. In order to regulate the limbic system, NMT recommends play therapy, art therapy, and expressive therapy. When the child's relational skills have improved, the clinician can target the child's cortex and utilize traditional talk, CBT, or insight-oriented therapy (Perry, 2009; Perry & Hambrick, 2008). NMT clinicians believe in the power of *neural plasticity,* or the ability of the brain to create new neuronal connections in response to experience, and to adapt accordingly. In addition, the focus of NMT supports the concept of *neurogenesis,* or the brain's ability to create new neurons throughout the lifespan (Blaustein & Kinniburgh, 2010; Carlson, 2010; Carter, 2009). A certain amount of neuronal rewiring is possible for the human brain through experience and repetition (Carlson, 2010). NMT clinicians maintain that the NMT approach follows an invariant sequence that mirrors the "bottom-to-top" development of the brain. Until the lower brain structures are organized, talk therapy will be ineffective. The child's brain is not able to function at more complex, higher levels due to the neurological impact of the trauma experienced (Perry, 2009; Perry & Hambrick, 2008).

Why Is NMT Needed?

Proponents of NMT maintain that many forms of therapy are not effective because they do not take neurobiological and neuropsychological development into consideration. NMT is a clinical approach that bases its interventions directly on the child's neurobiological and neuropsychological development. NMT clinicians maintain that this focus increases the chance of successful treatment. When a child experiences a trauma, she first registers fear in the brainstem, and it is this area of the brain that often requires reprogramming before traditional talk therapy can be effective (Perry, 2009; Perry & Hambrick, 2008). NMT has been created so that

clinicians can tailor their interventions specifically to the child's current neurodevelopmental and neuropsychological levels of functioning. This focus on neurodevelopment is what sets NMT apart from other trauma-focused treatments, and is what reportedly renders it particularly effective (Perry, 2009; Perry & Hambrick, 2008). NMT's focus on the brain distinguishes it from other treatments, along with its central premise that trauma can't be healed in a dysregulated brain. Only repetitive, focused activity can help the brain to change existing patterns, and become better regulated. Traumatized children change slowly in part because repatterning neuronal networks– that have enabled the child to survive– requires so much consistency and repetition over time. When a child experiences a traumatic event during a sensitive time in development, the result is a disorganized and/or developmentally delayed brain structure (Perry, 2009; Perry & Hambrick, 2008). NMT clinicians, therefore, endeavor to create stronger more adaptive neural pathways in dysregulated or disorganized brain structures. NMT focuses on the plasticity of the developing brain, especially the higher regions of the brain such as the cortex, since the lower regions decrease in plasticity as time goes on. For this reason, early intervention and treatment are crucial to successful recovery and reprogramming.

NMT also supports social relationships, though the justification is explained from the perspective of optimal brain development: *children's brains heal in safe relationships*. Clinicians are encouraged to support the active participation in the child's life of family, peers, teachers, spiritual leaders, community members, and other healthy adults. NMT clinicians believe that increasing and maintaining positive relationships in the child's life is fundamental to the child's neuropsychological and emotional growth and stability. The more positive, repetitive, safe, interpersonal interactions that the child can achieve and maintain, the better

regulated the brain will become, and the more complete the recovery will be (Perry, 2009; Perry & Hambrick, 2008).

An NMT approach involves utilizing a variety of traditional and alternative forms of treatment, such as massage therapy, yoga, art therapy, and music therapy, (i.e., drumming). NMT has also been successfully combined with other forms of treatment such as Filial Therapy (Barfield et al., 2012). It is possible that NMT could be integrated with other compatible interventions, in other clinical scenarios. As NMT is a therapeutic approach rather than a theory in and of itself; it lends itself to integration with other forms of therapy (Perry, 2009).

Case Example

In order to clarify how NMT is used, a case example is included in the following pages. Due to concerns involving patient confidentiality it was not possible to obtain specific information on a child client's NMT evaluation and treatment at the center. As an alternative, included here is a case study offered by Dr. Perry and Dr. Christine Dobson (2013) that demonstrates both the NMT assessment process, and the resulting visual representations of the child's neurodevelopmental functioning. The case of "James" is described in the following pages.

James is a 10-year-old boy without biological siblings who has been in and out of many foster homes since he was three years old. His biological mother engaged in episodic polysubstance use while pregnant. There were no complications with James's birth, and James lived with his mother for 18 months in a chaotic, unsafe, abusive environment until their neighbors contacted child protective services. James had been left on his own for days; he was bruised, severely malnourished, and had possible cigarette burns on his body. He was nonreactive and had significant hypotonia. After he was placed in foster care, he gained weight.

He began to engage in verbalizations and eye contact, and his motor development increased (Perry & Dobson, 2013). His mother returned into his life when he was two years old; at this time he began to experience "extreme tantrums." He was returned to his biological mother for one year, before he was removed again when he was found walking outside at night.

> He was not toilet trained, had minimal speech, indiscriminate affectionate behaviors such as rocking, head banging, fecal smearing, and hoarding food. He was placed in a foster home where he had severe difficulties with attention, sleep and language delays, fine motor and large motor coordination, among other problems. (Perry & Dobson, 2013, p. 252)

All of these issues led to involvement with mental health services. James received a diagnosis of attention-deficit/hyperactivity disorder (ADHD), was placed on a stimulant, and was not provided with any other evaluation or therapy. James's placement with a foster family was unsuccessful. He was placed with five different families during the next several years. James was also expelled from multiple educational and child care environments. He experienced two psychiatric hospitalizations (Perry & Dobson, 2013). His diagnoses increased to include "...bipolar disorder, oppositional defiant disorder, reactive attachment disorder, rule out childhood schizophrenia, pervasive developmental disorder, intermittent explosive disorder, and in several of the assessments posttraumatic stress disorder was added..." (Perry & Dobson, 2013, p. 252). James's treatment at this time consisted of *trauma-focused cognitive behavioral therapy* (TF-CBT); the interventions did not seem to help him to change his behavior, and "his behavior remained extreme" (Perry & Dobson, 2013, p. 252).

James was placed with his current foster family, which consists of two middle-aged adults who have many years of experience fostering children; two older teens live at home as

well. James's treatment consisted of TF-CBT, psychoeducation for the foster family, behavior modification, and consultation to the school; he was kept on the medications he was taking previously (Perry & Dobson, 2013). After approximately six weeks, James began to have difficulty in his foster home and at school, and his problematic behaviors began to increase (Perry & Dobson, 2013). The NMT assessment of James's case produced the following results (see Appendix C).

> Estimates of James's developmental adversity and relational health during this time put him in a very high-risk category throughout his development... the level of developmental adversity (along with minimal relational or social buffers) that James experienced would predictably alter the developing brain and lead to a complex and clinically confusing presentation. (Perry & Dobson, 2013, p. 253)

James's Functional Brain Map indicated that he had severe functional problems and in many domains was at a much younger developmental level than a peer his age. James's developmental history was significant for abuse and neglect, and consequently, his developmental risk was considered high. His adverse events and relational health scores were both moderate. His current CNS functioning was below his same-age peers in all domains. James's scores on his CNS functioning (which are depicted visually on the functional brain map; see Appendix C) indicated severe dysfunction on the arousal continuum and modulating reactivity/impulsivity. His scores indicated underdeveloped function in multiple domains, such as attention, sleep, attachment, reflective cognition, attunement, delaying gratification, affect regulation, reading, and verbal skills. His scores regarding primary sensory integration, short term memory, and appetite indicated a range of functioning ranging from moderate dysfunction to mild compromise (see Appendix C; (Perry & Dobson, 2013).

James's cortical modulation ratio (CMR), which indicates his ability to use higher areas of the brain to control and modulate lower brain areas, was significantly lower than what would have been expected of a child his age. "A typical 9-year-old child would have a CMR of 4.7; James's CMR was 0.72 (more typical of an infant; there is only a millisecond between impulse and action...)" (Perry & Dobson, 2013, p. 256).

NMT recommendations are made for a child, that child's family, and for what is referred to as the *therapeutic web.* NMT clinicians strive to increase the amount of healthy relationships in a child's life through connections with peers, in the school, in extracurricular activities, and in the community– this is the therapeutic web. The NMT therapeutic web recommendations for James were focused primarily on his school. Individuals working with James at his school required support and psychoeducation in order to understand James's developmental level, and subsequently to form appropriate expectations of his abilities (Perry & Dobson, 2013). The NMT recommendations made to James's foster family were similar. Although James's foster parents had worked with many foster children prior to James, their responses were not trauma-informed. They required psychoeducation in order to better understand how James's neurodevelopmental difficulties made it hard for him to modulate his affect and inhibit his impulses. They came to understand that James was sensitive to both intimacy and abandonment, making it difficult for them to interact with him emotionally. Psychoeducation on James's developmental level led to revised expectations of his behavior. Increased support and self-care, including respite for the family, were also recommended (Perry & Dobson, 2013).

The NMT clinicians involved in James's case maintained that James was too dysregulated to be able to receive benefit from his current treatment, TF-CBT. They recommended that James discontinue tutoring, speech therapy, and TF-CBT and instead engage

in somatosensory activities such as rocking, massage, drumming, and animal-assisted therapy. These activities would help James increase his sensory integration, and were considered essential recommendations. Activities such as breathing exercises, running, and one-on-one relational regulatory time were recommended in order to help James increase his self-regulation; these recommendations were considered therapeutic, with the exception of one-on-one relational regulatory time, which was considered essential (Perry & Dobson, 2013).

James received these changes in his treatment due to the NMT assessment. One year later, the NMT clinicians involved in his case repeated the NMT Metric (the various graphs, including the Functional Brain Map). During the year, James had not acted in ways that resulted in his expulsion from school. James's medications were titrated down and eventually discontinued altogether. His current functional domains values (i.e., sensory integration, self-regulation, relational, and cognitive scores) had all increased (see Appendix C). James's CMR had increased from a 0.7 to 1.4. His current level of modulation and self-regulation (1.4) was still not on par with peers his biological age. However, James had reached a level of self-modulation that "...would allow him to begin to tolerate and benefit from cognitive-predominant experiences. He was now ready to benefit from tutoring, speech and language interventions, and TF-CBT" (Perry & Dobson, 2013, p. 258).

Outcome Research on NMT

NMT was developed approximately 20 years ago. Since that time it has been adopted by various mental health settings in multiple countries (Perry, 2009; Perry & Hambrick, 2008). There has not been as much research on NMT as, for example, TF-CBT or ARC. Its popularity has vastly outstripped evaluation of efficacy. Although there are reports that evidence for

NMT's efficacy is in the process of being prepared for publication, to date there are just a couple of published outcome studies supporting NMT.

Two Published Outcome Studies

Barfield et al. (2012) conducted two studies on NMT in a therapeutic preschool in the Midwest. The studies took place over two summers, studying 28 children. "Children with trauma, chaos, and threat-related developmental dysfunctions are a major challenge in a preschool setting..." (Barfield et al., 2012, p. 31). All of the children in these studies had failed in the preschool Head Start program, and had been identified as having serious emotional disturbance (SED) and behavioral problems. All of the children were given a NMT assessment; the clinicians examined the children's developmental histories, current relational histories, and the levels of their central nervous system (CNS) functioning. All of the children struggled significantly with self-regulation and relational interactions. These children had significant impairment in their brainstem and diencephalon capabilities (Barfield et al., 2012).

The NMT recommendations for treatment included somatosensory activities, such as rocking and therapeutic massage, and individualized relational interactions, such as one-to-one time outside of class. Other recommendations were "...patterned, repetitive, developmentally matched activities (i.e., singing, sequencing, rhythmic movement, therapeutic touch, infant games, play, movement activities, pacification, rudimentary social skills, calming activities)..." (Barfield et al., 2012, p. 33). These activities were meant to increase the child's social and emotional regulation, and provide the child's disorganized and underdeveloped lower brain regions with organizing information. Individual plans, and their dose, nature, and timing, were created according to each child's strengths and challenges. Both studies focused on the effect of

NMT on the child's social and emotional development, as well as the effect of NMT on the child's behavior (Barfield et al., 2012).

The staff received training in both NMT and Filial Therapy. Filial Therapy is a dyadic approach based on child-centered play therapy. It is intended, in part, to increase parents' empathy and acceptance of their child's needs, as communicated through play, while teaching them how to set developmentally appropriate limits. Filial Therapy also encourages a child to choose activities and accept responsibility for his actions (Barfield et al., 2012). NMT and Filial Therapy were integrated during the school year, and only NMT was used during the summers, when the data for these studies were collected. The first study was a pilot study; the second study offered an expanded follow-up study that was conducted to better understand the effects of NMT in the same therapeutic preschool environment (Barfield et al., 2012).

Data collection. Teachers and parents were ignorant of the collection of the data. The teachers were required to utilize standardized measures in order to track the progress of the children. The researchers in these studies used the Preschool Social and Emotional Developmental Readiness Index (PSEDRI) in order to measure the social-emotional development of the children, and the Achenbach Child Behavior Checklist (CBCL) to measure the children's emotional and behavioral problems as reported by the parents and teachers. Parents and teachers of participating children filled out the CBCL (Barfield et al., 2012).

Discussion. The results of these studies are exploratory and preliminary. Difference in *t* test scores and effect sizes were considered when determining if significant improvement occurred, with 0.2 as a small effect size, 0.5 as medium, and 0.8 as large (Cohen, 1992). In the first study, Barfield et al. (2012) found a significant improvement in children's composite PSEDRI pre-test and post-test scores, and the effect size was significant (d = 2.34). There did

not seem to be any significant improvement in parents' ratings of children's CBCL internalizing or externalizing scores. Also, there was no marked improvement in teachers' ratings of children's CBCL internalizing scores, though there was significant improvement in externalizing scores, and the effect size was medium (d = .57).

In the second study, Barfield et al. (2012) discovered improved composite PSEDRI scores during the NMT phase of the study compared to baseline. Barfield et al. found very slight improvement in children's time series composite PSEDRI scores from baseline to weeks two and three, and then significant improvement in following weeks; effect sizes ranged from 0.9 in week two to 1.16 in week 10. There was no significant improvement in parents' ratings of children's CBCL internalizing and externalizing scores, or teachers' ratings of children's CBCL internalizing scores; there was significant improvement in teachers' rating of children's CBCL externalizing scores, with a medium effect size of d = .67.

The results of these two studies are mixed, and somewhat inconclusive. In the first study, there was a significant improvement in children's composite PSEDRI scores. In the second study, there was significant improvement in children's composite PSEDRI scores during the NMT phase of treatment, especially after week three. However, there was not any significant improvement in parents' or teachers' ratings of children's CBCL internalizing behavior in either study; there was a significant improvement in teachers' rating of children's CBCL externalizing behavior. The results of these studies intimate that NMT may potentially be useful in increasing young children's social-emotional development, and improving their problematic behavior, but the results of these studies are not conclusive; they are exploratory. These studies were also limited by their small sample sizes, the age of the children (all pre-school aged children), and the lack of racial and ethnic diversity among the children (Barfield et al., 2012).

Possible Limitations of NMT

NMT is not, as yet, an empirically supported approach to trauma treatment. At the core of NMT is a focus on the neurodevelopment of the child. Development of a Functional Brain Map is a key element in treatment planning. However, such data collection may well exceed the resources and training of many clinicians who will need ample time and knowledge to estimate which areas of the brain are responsible for the psychiatric symptoms displayed by the child. Mental health professionals must have a certain amount of expertise in child development, neurodevelopment, neuropsychology, and traumatology in order to effectively deliver NMT; not all mental professionals possess this knowledge or have the possibility to acquire it (Perry, 2009; Perry & Hambrick, 2008). In addition, many children who present for trauma treatment have had multiple caregivers. Even if a clinician is capable of developing a Functional Brain Map, it is likely that the available developmental data will not be sufficient to inform the task.

In NMT there is a significant focus on creating and sustaining healthy, consistent, authentic relationships between the child and her caregivers, family, teachers, community members, and peers. It is well proven that brains heal best in safe, stable, predictable, and nurturing environments (Perry, 2009). However, it is simply not realistic to assume that all children will have access to numerous– or even any– healthy, consistent, authentic relationships with others. Many communities struggle with poverty, violence, substance abuse, isolation, and hunger. Children in the foster care system may have moved in and out of these chaotic circumstances. In these environments, it will likely prove difficult to provide the traumatized child with numerous healthy relationships; or to encourage stability from exhausted caregivers who may be traumatized themselves, and suspicious of mental health professionals.

At the same time, none of the existing approaches appears to make an enduring

difference in ameliorating the most fundamental problems associated with child trauma. Regardless of the approach to treatment, there are often an overwhelming number of external client and community variables present, such as extreme poverty, transportation difficulties, language barriers, cultural differences, and lack of options and resources that may render therapy difficult or impossible. It is not clear how NMT would address these social and cultural obstacles any more persuasively than existing interventions.

In addition, the full training for NMT clinicians is expensive. The cost for a Site Training Certification Phase I for seven to nine participants is $3,500 per person. If the group is greater than ten people, then the cost is $3,000 per person. Individual Training Phase I costs $4,000 per person. The Child Trauma Academy also offers a NMT case-based training series, a clinical case conference series with Dr. Perry discussing cases with participants attending via internet. This is a series of ten 90-minute sessions, for a total of 15 training hours. CTA offers four enrollment options for this case conference series: (a) live as an organization costs $1,825; (b) live as an individual costs $650; (c) use of recordings as an organization costs $1,525; and (d) use of recordings as an individual costs $500. This NMT case-based training series is offered twice annually (CTA, 2011). Despite the lack of evidence, the limitations of the approach within a more ecological framework, and the cost of the training, NMT continues to be extremely popular as an evaluation and intervention model.

The Anatomy of a Hot Idea: The Appeal of NMT

What is the great appeal of NMT? Why has it become so popular in the U.S. and internationally as an approach to working with traumatized children? NMT is not an empirically supported therapy. It is an approach to working with traumatized children. It offers a systematic approach to evaluating and working with traumatized children based in a compelling but as yet

unvalidated theory. NMT does not yet appear on APA or NCTSN lists of effective treatments and promising practices. There has not been much outcome research conducted on NMT at this time, nor does there appear to be much on the horizon. If NMT is an approach to therapy, rather than a therapy in and of itself, does that explain its absence on APA or NCTSN lists of effective treatment methods? Dr. Perry's trainings are well attended; his online courses are expensive and very popular. In a time of diminishing funding for continuing education for line staff who work with children, child welfare agencies, (like the one in this study), are finding money for training their therapists in NMT. Why?

One theory is that paradigms in psychotherapy arise in a particular time and place, usually with a brilliant and charismatic theorist to engage a public hungry for new ideas. From Freud to Rogers, to Minuchin, to Beck, one can see the strong association between a theory and the personality of its creator. Dr. Perry, the bestselling author of *The Boy Who Was Raised as a Dog*, has an international media presence, suggestive of his gifted marketing of his clinical ideas. Is the popularity of NMT inextricably interwoven with Dr. Perry's own rising star? Another possibility is timing: with the ascendancy of fMRI and neuroscience as a way to explain human frailty and suffering, NMT has arrived on the scene at just the right historical moment. Trauma-related neuroscience may be appealing to clinicians because it provides them with a concrete and scientific reason why their traumatized child client is dysregulated, and often does not improve. NMT has astonishing face validity; it makes such good sense. There may also be something reassuring about a "scientific" model that locates the reason for the child's emotional and behavioral problems in neuroscience and medicine. If the deficit is neurobiological, it may seem concrete, tangible, and therefore more manageable. As a society we seem unwilling to wrap our heads around the epidemic of child abuse and neglect, the inequitable access to basic

resources, or the real human cost of poverty and isolation; but perhaps we can help a brain become more regulated.

A regulated brain in a traumatized child would be impressive, opening up the possibility for healing and relatedness. Dr. Perry explains that many trauma-based therapies are not effective because they ignore neurodevelopment. There are, perhaps, many reasons why existing treatments don't make enduring changes, and this, indeed, could well be one of them. It seems that, at the very least, NMT supplies the frustrated clinician with hope that his efforts, if redirected in a neurodevelopmental direction, could prove more fruitful.

It would be grossly inaccurate to state that NMT's focus is only on neurodevelopment. The strength and appeal of NMT may, in fact, lie in its lack of specific intervention protocol, and its holistic approach to assessment and treatment. The child's brain function is mapped: specific activities are prescribed to improve its functioning. However, there is also significant emphasis on strengthening the child's environment, and specifically on creating healthy relationships with family, peers, and community members. NMT emphasizes *both* individually directed therapy, and improving the environment of the child; increasing the child's relational health has a direct impact on brain development. NMT clinicians recognize that the child's brain develops, at least in part, in response to the environment. NMT may also owe its popularity to this holistic approach, one that can be adapted to each individual case, and integrated with multiple forms of targeted therapy (e.g., massage therapy, art therapy, insight-oriented therapy, etc.; (Perry & Hambrick, 2008). Also, although it's not empirically validated, there is a solid evidence base supporting NMT's basic tenets: the brain develops hierarchically, and children's brains have the advantage of neuroplasticity– pathways are developed and transformed through repeated experiences (Carlson, 2010; Carter, 2009).

Chapter 3

Methodology

To fill an evident gap in research into the use of NMT, I conducted a qualitative research study of its application at a child welfare agency. I used IPA to collect and analyze my data, and I utilized a constructivist paradigm approach to my research. I interviewed seven mental health professionals who use NMT in a child and family community health center in New England. I intended to discover why mental health professionals at this center chose to integrate NMT into their clinical work. I was curious to learn what the experience of these mental health professionals had been as they employed NMT in their clinical work with children. I wanted to learn how effective these mental health professionals found NMT to be, and to hear the evidence they provided to support their observations. As I collected my data and furthered my research, I considered multiple ethical concerns, and I was mindful of my role as a qualitative researcher.

Research Objectives

I conducted a qualitative research study on NMT at a child and family community health center in New England. (For the remainder of this dissertation, I refer to it simply as "the center.") I explored the experiences of the mental health professionals at this center in an attempt to understand how using NMT has worked for these individuals. I was interested to learn why the therapists at this center decided to integrate NMT into their approach. I was curious to learn what these mental health professionals felt about NMT, how they determined if it was effective, and if so, what about it was effective. I hoped to discover what changes they witnessed in their clients and in themselves since using NMT strategies. I wanted to understand what their personal experiences of working from a NMT perspective had been, and how these mental health professionals made sense of these experiences. The information that I obtained

from this study may benefit other mental health professionals who utilize a NMT perspective, or may benefit mental health professionals who are interested in adopting a NMT perspective in their future clinical work.

Constuctivist Paradigm

I utilized a constructivist paradigm as I conducted my qualitative research on NMT and the mental health professionals at the center. The constructivist paradigm evolved out of Husserl's philosophy of phenomenology and Dilthey's philosophy of hermeneutics (Mertens, 2010). Constructivist researchers maintain that reality is socially constructed, and all meaning is essentially interpretative. Research data is therefore a product of the researchers and interviewees; it is impossible to view any information objectively, or to interpret it without bias or judgment. There is no such thing as objective reality that can be observed or measured. Consequently, it is the researcher's goal to understand the multiple social constructions of reality and knowledge that are created by the interviewees and the researcher (Mertens, 2010). Data collection is interactive. The methods used in the constructivist paradigm are interviews, observations, and document reviews (Mertens, 2010). In my research study, I conducted multiple semi-structured interviews with the mental health professionals at the center.

Continuity Between My Paradigm and Research Objectives

The constructivist paradigm was appropriate for the purposes of my research study. The information that I collected from the therapists at the center had to do with their individual experiences of using NMT with their clients. As a constructivist researcher, I did not believe that there was one reality or one experience of using NMT. I aimed to understand the personal and idiographic experiences of the NMT therapists at the center. I intended to gain increased insight into their perceptions of NMT's efficacy. I made observations and conducted interviews,

collecting qualitative data (Mertens, 2010). I understood that in order to be true to the constructivist paradigm, I needed to allow the interview questions to evolve as my study progressed; I constructed a number of questions for a semi-structured interview, and then added or subtracted questions as the study evolved (see Appendix F). I interviewed a variety of individuals at the center, all of whom had been trained in NMT, in order to gain multiple perspectives on the collective NMT experience. After I collected my data and analyzed it, I planned to schedule a time to share it with the mental health professionals at the center, both individually and in the form of a group presentation, in order to allow them an opportunity to comment on it and assess its accuracy (Mertens, 2010). As a constructivist researcher, I realized that my ideas and my personal presence inevitably influenced the information I collected and analyzed. I realized that the research process was interpretative and interactive, as was appropriate for constructivist research (Mertens, 2010).

My Role as the Researcher

During the process of conducting research, I focused on maintaining reflexivity. I was mindful of my own thoughts and experiences during the research. As a constructivist researcher, I was aware that I influenced the interview process. As a consequence, it was vital that I be aware of myself, and my inner processes. I sought to remain reflexive for the duration of the research study. I kept a journal in order to track my own thought process during this research study.

My Reflections

As I reflected on my research and research topic, I realized that I was far from neutral. I was enthusiastic and optimistic about NMT and its potential positive effects on traumatized children. I wanted to believe that NMT succeeds where other trauma-based approaches to

therapy fail. I wanted to believe that there is an approach to trauma-based clinical work that successfully alleviates the negative and wide-ranging cognitive, emotional, physical, and neuropsychological effects of child abuse and neglect. I had significant empathy for traumatized children, and I was mindful of the fact that I desperately want this population's suffering to diminish. I was clearly invested in hearing positive information on NMT.

Simultaneously, I realized that I harbored suspicion. Why isn't NMT empirically supported? Is it simply that the approach is so new that limited research has been conducted? Is NMT popular because in many respects it is a "scientific" approach that focuses the attention of the therapist on the individual strengths and weaknesses of the child, rather than focusing on larger social and cultural issues such as poverty and crime? Is it easier to focus on the individual problems rather than the overwhelming social problems? Is a neurodevelopmentally based approach appealing because the neuroscience element adds scientific credibility? Is NMT popular largely because its prime creator is charismatic, well-spoken, and promotes it nationally and internationally? I was aware of my curiosity and my confusion.

In my expectation that there was research on NMT that I just couldn't find, I first struggled to obtain the research on NMT on my own. However, the process was unusually difficult even after I enlisted the help of a remarkably talented library researcher. At various points in time, I made contact with the Child Trauma Academy, trying to get their help; however, I received only limited information. In the end, I found rather sparse outcome research on NMT; the only published outcome research I discovered was the article by Barfield et al. (2012) on two small studies conducted at a therapeutic preschool. My contact at the center confirmed that there was indeed a dearth of outcome research on NMT. The process of finding out about NMT has, in some ways, underscored its mystery and intrigue for me.

The Center

The center is a private, non-profit mental health agency for children and their families in New England. The mental health professionals who work at the center build on the clients' individual strengths and abilities as they seek to create positive, pro-social community environments. The center uses a community-based, wrap-around approach to therapy, and offers individual and family therapy to children, adolescents, young adults and their families. The center has multiple programs in New England, among them residential treatment, family outpatient treatment, post-adoption consultation, a hospital diversion program, alternative education programs, community-based foster care programs, and community outreach. The therapists at the center strive to provide high-quality mental health care and community integration to children and their families. The therapists at this center seek to promote safety, respect, and responsibility in the nearby communities. These therapists support and stabilize the home and educational placements of their young clients. The center offers culturally sensitive, flexible, creative, and individually tailored services to its clients. The center maintains and promotes a "no child will fail" philosophy. The center provides a great deal of training for its clinicians; in recent years, they have had more intensive staff trainings in ARC and NMT.

Context

The center is located in New England in a middle-to-low income urban area. This area is home to approximately 42,000 individuals who are 94.4% Caucasian, 3.5% African American, 2.4% Latino, and 2% Asian; 1.7% are biracial or multiracial; 1% are from a different race than the ones listed previously. Roughly 20% of the population lives below the poverty line. The center sees a disproportionate number of children and families who live in poverty; the center's primary insurance is state Medicaid.

Ethical Concerns

As I collected qualitative and experiential information from the therapists and supervisors at the center, I remained mindful of potential ethical concerns. I strove to uphold the ethical principles of beneficence, non-maleficence, and respect for people's rights and dignity (APA, 2002). I did not proceed with my research until the therapists involved received and signed an informed consent form (see Appendix E). The therapists who agreed to participate in this study retained the right to discontinue at any time.

All research studies carry potential risks, and this research study was no different. It was possible that the interviewees could have experienced some discomfort or mild distress when asked certain questions. The interviewees could have been reminded of difficult clinical scenarios and consequently re-experienced discomfort or mild distress as they narrated their experiences working with NMT and traumatized children. The interviewees could also have been concerned about how their answers reflected on their clinical work, on the center's reputation, or on the center's accreditation in NMT. The interviewees could have been reluctant to disclose their true opinions and experiences to an outsider. I sought to earn their trust, be empathic and authentic, and present them with clear information.

Before I began any interview, I clearly stated that I would do my best to protect the interviewee's privacy. I could not ethically promise full confidentiality, as this paper will be read by my professors at Antioch, and by some of the staff at the center. I explained that I would handle their recorded interviews in an ethical manner, and that I would not put their names on any materials associated with the interviews, nor share their individual observations with supervisors. I stated that I was interested in the interviewees' personal experiences of working with NMT, and that there were no right or wrong answers. I explained what they could expect

from the interview, and approximately how long it would last. I stated that they could discontinue at any time if they felt uncomfortable, and I monitored the effect of the interview on the interviewee. I explained the purpose of my research study. I sought to be respectful throughout the process, and I thanked the interviewees for their time, openness, and assistance when we completed the interviews.

Data Collection Methods

I conducted semi-structured one-on-one interviews with seven of the mental health professionals who work at the center and utilize NMT in their clinical work. I observed the interviewees and I listened carefully to their comments. I allowed the interview questions to evolve as the research study progressed, and I was mindful of my own inner processes, maintaining reflexivity. I have included a copy of the semi-structured interview outline with which I began the interviews (see Appendix F). The questions that I developed are based on the larger research objectives that evolved over the course of the review of the literature. I intended to obtain multiple perspectives on utilization of NMT in order to comprehend the range of individual experiences of the mental health professionals working with NMT at the center. In this context, I hoped to better understand the use and integration of NMT.

Data Analysis

I used IPA as the qualitative research procedure in my research study. IPA required that I provide a semantic record of the interviews, and that I realize transcription is, in and of itself, an interpretative activity (Smith et al., 2009). When I analyzed the data I collected, I listened and looked for emergent themes in the data. I analyzed the experiential information provided by the mental health professionals at the center, line by line. I ascertained if there were convergence and divergence of themes within each case, and across cases. IPA mandated that I move from

focusing on individual experiences to shared experiences, and from description to interpretation, while being committed to understanding the interviewees' points of view. My attention was always directed toward the interviewees' ways of making sense of their experiences (Smith et al., 2009).

As I analyzed the experiential information I had obtained from the interviewees, I looked for connections among the emergent themes. In order to determine these relationships, I used the IPA techniques of identifying patterns through *abstraction, subsumption,* and *polarization*. Abstraction is a process of identifying similar emergent themes, and then grouping them into a larger category, known as a *superordinate* theme (Smith, Flowers, & Larkin, 2009). Superordinate themes are over-reaching, and encompass the connections between similar emergent themes. When an emergent theme itself is over-reaching and connects multiple related themes, it becomes a superordinate theme. In this case, I used subsumption to move from the superordinate theme and to pinpoint smaller emergent themes. I also used polarization to identify oppositional relationships between emergent themes. Polarization can be useful when determining what superordinate themes exist, both in a single case, and across cases (Smith et al., 2009).

As I shifted my focus from one interviewee to another, I strove to temporarily ignore the themes emerging from the previous encounter. I attended to the current interviewee's experience and narrative, and honored "IPA's idiographic commitment" to each individual (Smith et al., 2009, p. 100). After I collected all the experiential information from the multiple interviewees, I sought to identify patterns across cases, and determine what the emergent and superordinate themes were. I then sought to interpret and analyze these themes.

Analyzing Themes

The transcription process was both lengthy and informative. After transcription was complete, I analyzed each transcript slowly. After again listening to each transcript, I read each one carefully, and I began to organize interviewees' statements into themes. I amassed a significant number of larger and smaller themes that emerged frequently during the interviews. I also made note of themes that only emerged occasionally during interviews with certain interviewees. I then examined the themes that arose in each interview and categorized them further into emergent and superordinate themes. I often used subsumption and abstraction in this process. I sought to establish the recurrence of themes across the sample of interviewees. I sought for connections between emergent themes. The emergent themes, as understood in IPA research, are indicative of both the interviewees' and the researcher's perspectives (Smith et al., 2009). Although I noted all themes that emerged, in the following pages I will primarily focus on themes that were relevant for at least half of the sample. When working with a larger study sample (six or more participants), the researcher may engage in measuring recurrence and address the key themes for the whole group (Smith et al., 2009).

During this analysis process, I sought to condense the data and accurately label the repeated themes. I sought to accurately represent the interviewees' experiences. I compiled transcript extracts from each interview and organized them into support for emergent themes in each interview. I then re-examined the emergent and superordinate themes in order to increase accountability and reduce interviewer bias (Smith et al., 2009).

Chapter 4

Results

Participants

I interviewed seven mental health professionals affiliated with the center, all using NMT in their clinical work. Participants ranged in age from early 20s to early 50s, were both male and female, and varied in their years of experience. All had received at least 16 years of education, and all worked, in some capacity, with children and adolescents. All participants were Caucasian and lived in the same northeastern state. Many of these mental health professionals had been using NMT since the center began the NMT certification process five years ago. Many were also part of a core group at the center that been involved in the earliest NMT trainings. The interviews varied in length from one hour to 90 minutes. Most interviews lasted approximately 75 minutes and took place in the interviewees' private offices, with the exception of one interview that was conducted in a local cafe.

Superordinate and Emergent Themes

The emergent and superordinate themes are examined in the following section of this dissertation. The superordinate themes are presented under flush left headers. The emergent themes have been summarized, and are sometimes supported by selected comments from participants. Appendix G offers a complete list of all emergent and superordinate themes. A visual representation of the emergent and superordinate themes may be viewed in Appendix H, and a complete list of participants' comments is also available in Appendix H.

Using NMT

All seven of the participants interviewed discussed how they use NMT in their work. The experiences of the participants varied, as did their exposure to and training in NMT. Many

employed NMT through outpatient therapeutic, evaluative, and consultative work. Some used NMT as a therapeutic lens for their clinical work. Some used NMT in a residential or an inpatient setting. Four of the seven participants discussed using NMT as a framework for all of their clinical work. For these participants, NMT is a tool that allows them to consider their clients from a neurobiologically and developmentally sensitive perspective. Participant number one reported, "I see it [NMT] as just an overall framework for healthy development." Participant number seven explained, "It [NMT] helps with the understanding of the process and consequences of trauma."

Three of the seven participants discussed using NMT as an evaluation and consultation tool. These participants use NMT outside of the center when completing trauma evaluations. They use NMT when working with schools and the Department of Children and Families (DCF). Participant number two stated, "We do therapy in house, and then we do a lot of consultation and evaluation work outside of here, with schools, and with DCF." He explained, "So, primarily we are being asked by other agencies to evaluate and consult on kids that have developmental trauma. So NMT is part of the workup that we do." Participant four discussed how NMT might impact DCF:

> In the best of all scenarios, NMT will help our DCF system understand the need for permanency for kids, that there are certain situations that linger too long and too many chances are given, and kids' brains and bodies are hurt in the process continuously...

She concluded, "Hopefully this model will help us to understand the urgency of getting these kids early intervention and early permanency."

Integration of NMT

In response to the question, "Are you integrating NMT with any other therapy model?"

all participants discussed how they integrated NMT with other therapeutic approaches. All noted how well NMT could be integrated with any other model. Many participants utilize NMT and ARC in their clinical work, and some use NMT, ARC, and DBT. Four participants described integrating NMT with ARC and DBT. Two participants integrate NMT with family systems. Two other participants, both of whom work in residential or inpatient facilities, discussed how NMT has become integrated into daily activities; they felt this integration was successful. Participant six summarized, "It works pretty seamlessly for us... it just sort of fits in with everything now... So it's always here, it's integrated into everything."

One participant noted that she used NMT as an assessment tool and ARC as an intervention tool; she used NMT to understand what needs and deficits the child client had, and then used ARC to deliver appropriate interventions. One participant noted that NMT was intended to be integrated with another therapeutic approach. All participants used NMT regularly and often combined it with other therapeutic approaches in a reportedly seamless way.

Positive Effects of NMT

Participants were asked to describe the effects of NMT on their clients and staff. Every participant spoke at length about the positive effects of NMT that they witnessed. Many reported a decrease in clients' problematic behaviors, including a decrease in restraints, dysregulation, aggressive behavior, emotional outbursts, and acting out. Participant number one, who works primarily in a residential setting, stated that there were markedly fewer restraints since he and his staff began using NMT. He explained that it had become policy to call the police if children in the residential home were engaging in unsafe behaviors. He stated, "We've maybe called the police once or twice in the last year." He commented, "When the kids start to dysregulate instead of sitting down and doing talking, processing in writing, they go to the gym. And so

there is a lot less talking and more movement...” One participant mentioned that NMT specifically helps children who struggle with dysregulation. Another participant stated that NMT has allowed staff to understand and handle crises differently.

Many participants noted an increase in empathy for their child clients when using NMT. These participants observed an increase in empathy in clinicians, families, providers, and in the child clients themselves. Participant number one explained, “... they are compassionate with themselves because they understand themselves and each other, who they live with, at a different level.” Many also reported that NMT has led to a decrease in negative judgment regarding their child clients; these participants maintain that NMT has allowed their clients to be viewed differently. Participant number two explained, “When you look at the brain and the function, it helps reframe what might be pejoratively referred to as, that kid is a jerk, or aggressive, and you can convert it into internal states.” He maintained, “If you reframe defiance as fear, you hear that very differently.” Two participants mentioned that they found NMT to be empowering and validating to clients and staff. However, one participant added that he was unsure how much of the client empowerment he had witnessed was attributable to NMT. Another participant stated that NMT has been empowering to her because, “Nothing prior to this has worked.”

Positive Aspects of NMT

Every participant was requested to comment on the advantages of NMT. All participants discussed positive aspects of NMT. Many found that NMT gave their clinical work an increased sense of credibility, due to NMT’s base in science and brain development. Participant number two stated, “It [NMT] brought science into a field that hasn’t been... there is a credibility part... Its credibility– it’s understandable, it’s accessible, and it’s hopeful.” Participants also noted that the inclusion of information on brain development and the brain’s reaction to trauma into their

work was exciting to providers and families. One participant maintained that NMT had expanded comprehension of human behavior. Many participants observed that NMT offered hope where there had not been hope previously. Participant number three remarked, "And there's enormous hope, because for the first time, we've always been working really hard to help these kids, but for the first time it feels like we are actually getting somewhere." Several participants discussed how accessible and parent-friendly NMT seemed to be; some were surprised to discover that parents were open to hearing how early trauma had impacted their child's brain and subsequent behaviors, especially when the early trauma involved the parents.

Several participants commented on how NMT led to increased validation for all involved in their clients' treatment. Participant number seven discussed how NMT can be validating to parents of clients. "So, I think that understanding that there's a kind of dysfunction... I think that we do that in a way that simplifies and validates all that for the parents." She clarified, "So, okay, does the child have these things in his brain? It's not his fault, it's not their fault." One participant stated that NMT allowed his staff to feel validated in their clinical work. Another participant mentioned that NMT validated how and why clinical work with traumatized children is so difficult.

One participant discussed the specificity and frequency of NMT interventions. Participant number four explained, "I think the advantages [of NMT] are to really localize the impact [of the intervention]..." She stated that in addition to the time her clients spend with her "They're also at some point throughout their week participating in adjunct body-based modalities outside of here... So it feels like kids get double-dosing, triple or quadruple-dosing throughout the week, and it's enhanced the pace of change and helped parents, I think."

All participants spoke positively about NMT, and many participants praised NMT

without prompting. Participant number one stated, "It's [NMT] reinvigorated my sense of working here. Yeah, I feel really, really proud of the work that my staff do with the kids. And I think that the NMT model and practices have really helped us." Participant number two commented, "As we keep saying to Bruce [Perry], we're on fire." Participant number five stated, "It really does feel like in the last five years, it feels like, even though we have been doing this work for many many years—we know what we're doing now."

Participant number six commented:

> So I think it's been super successful and in the time that I've worked here, just the way that we've shifted our approach to working with kids who have experienced trauma has gotten a lot more informed and I think we've gotten better outcomes just with daily life and kids feeling safe and secure.

Disadvantages of NMT/Barriers to Implementation of NMT

In response to the question, "What are the disadvantages of using NMT?" four participants discussed less positive aspects of this therapeutic model. Three participants stated that they had not found any disadvantage to employing NMT, and were unable to name any negative aspect of NMT. One participant wondered if it was an elitist model; she intimated that some felt the model had not been accessible to them. Some participants discussed barriers to successful implementation of NMT. Three participants reported that insurance companies do not provide coverage for an adequate number of hours in which to complete a comprehensive NMT evaluation, nor do insurance companies always provide coverage for all NMT activities. Participant number three stated, "I think some of the drawbacks of NMT would be that the, um, insurance and just the general, um, system haven't caught up funding-wise with the concept..."

She clarified, “I think if people really look at– if you wanna just look at the cost, this is not cheap. But it seems to me that it’s either slightly cheaper or equal to what residential costs.”

The struggle with insurance companies to cover more integrated client treatment is a common problem and part of a larger systemic issue. Two participants commented on systemic issues, not specific to NMT, which impeded progress and quality of care. Participant number five stated, “And then more systems [need to] change, to have the resources to continue that. So we can do it here, but the rest of the world isn’t necessarily built to do it, so that’s frustrating.” Participant number seven also spoke of larger systemic issues that limit funding for care. “The system is awful, it just is... The limitations are real. And there is only so much you can do regardless of what approach you use, what framework you use.”

Participant number one commented on the difficult and lengthy NMT training. He stated, “I just don’t think there are that many agencies and clinicians who can put in four or five years to learn it. And then, themselves, train others on it. So that remains to be seen.” He also commented on the process of adopting and implementing NMT. He explained, “I don’t know that it is a problem with the model per se but I think that’s really where the rubber hits the road- helping people adopt it.” Participant number one stated that NMT was very effective in a residential setting, but he was mindful of how it might become more difficult to use NMT in other contexts. He commented, “I think it would be much harder for me to do these kinds of things if I had a kid in my home who would need this...”

Two participants spoke about having learned to remain within their own limits as they utilized NMT. Participant number three stated, “In the beginning of 2012, we tried to take kids that were harder, because we thought we’d learned so much from NMT, maybe we could do this.” She continued, “And one of the things we learned—it didn’t work—it was a disaster,

actually. Nobody got hurt, the kids were all very well cared for. But the staff (laughs) ..." Participant number five intimated that at times it has been difficult for those trained in NMT to remain rooted in their own competency and not exceed their limits.

Dr. Perry

Without prompting, six of the seven participants spoke positively about Dr. Perry and his work. Many participants commented on the appeal of Dr. Perry, his great charisma and intelligence. Participant number one discussed how the agency became excited about implementing NMT after hearing Dr. Perry speak and meeting with him. Participant number two stated that staff at the center were interested in Dr. Perry and his work for years before they began collaborating. They spoke of his ability to create enthusiasm in others for NMT, and his ability to render complicated neurobiology accessible. Many spoke of Dr. Perry as a mentor and a teacher. They praised his knowledge base and his dedication to helping clinicians learn. They admired both his oral and written work, and commented on how lucky they were to work so closely with him. One participant acknowledged Dr. Perry for being forthright about the limits of NMT, and the importance of context on NMT's effectiveness. Another participant commented on Dr. Perry as a political figure. She expected that as Dr. Perry became "more politically prominent," NMT would gain prominence as well.

The Metric/Brain Map

Although I did not ask any direct question about the NMT Metric, the graphs created during the NMT assessment process, most participants spontaneously discussed it. Many commented on families' reactions to use of the NMT Metric, and several others discussed their own experiences of using the Metric. Many participants stated that families found the Metric to be accessible and useful. Participant number three reported, "There is something about that

formulation, that picture—something about the way that we can explain the brain development with that tool." She continued, "It's more user-friendly. People can get it. It doesn't matter your level of education or background. It makes sense to them." One participant maintained that some families were wary of the Metric. Multiple participants praised the Metric, and others found it very difficult to learn how to use. One participant reported that the CTA was fine-tuning the fidelity to the Metric. He also explained that there had been progress regarding the center's fidelity using the Metric. Some participants used the Metric regularly, mostly during trauma evaluations; they used the Metric more often for trauma evaluations outside of the center than with outpatient therapy clients. Some staff did not use the Metric as often as they would have liked. Participant number five stated, "Right now, I would like to say and I hope we will get to a place where we use the Metric for everyone that we serve at the center." She added, "And I think we're working towards that, it's just a resource issue." Some staff used the Metric as a framework, and some did not use the Metric at all. Some participants felt the Metric should be used more often in order to generate funds for the center.

Regarding the Metric, Participant number one commented, "...it is a really clinically sophisticated tool to use. And I think the downside to that is that it can be very easily misused, unintentionally misused." He added, "And that level of training may not be realistic in terms of a sustaining model."

Measuring Progress

In response to the question, "How do you measure clients' progress?" all participants discussed how they keep track of clients' outcomes. Two participants reported that they use the Metric in order to measure client progress. One participant uses the Metric once a year, and another participant uses the Metric every six months. These participants related that they had

seen positive change in clients' Metrics over time. Several other participants stated that they relied on more common quantitative measures, such as the Vineland Adaptive Behavior Scale, the Achenbach Child Behavior Checklist, trauma symptom checklists, and depression inventories, in addition to occasionally using the Metric. One participant explained that she used multiple measures including the Parent-Stress Index, the Adult Attachment Inventory, the Minnesota Multiphasic Personality Index, as well as measures of executive function. All the participants who reported using quantitative measures stated that they had seen improvement in clients when utilizing NMT, and when using other therapeutic approaches. One participant stated that staff participated in case reviews every other week in order to monitor progress. Another participant reported that although Achenbachs were used routinely on the inpatient unit where she worked, this measure was not an accurate representation of her clients' progress. She explained that due to the brief nature of clients' stays on the inpatient unit, she did not measure clients' progress in a quantitative way. She commented that she was primarily concerned with keeping her clients alive, and if her clients were alive then she considered that to be client progress. Another participant reported that although he used quantitative measures, he also relied on parents' feedback. He stated that he used parents' feedback to help track client progress over time.

Research on NMT

All participants responded to questions about the lack of research on NMT. All participants explored reasons why little research on NMT currently exists. Multiple participants maintained that political motives were the cause; they intimated that certain forms of briefer therapy (i.e., CBT) are more researched because they receive more funding than less popular therapeutic approaches, such as NMT. Participant number one stated, "Within the academic

world, my experience of it is that people have their camps, and they are invested in their models, and there is a lot of prestige and ego and power and politics and money involved in all of that." One participant stated that a paradigm shift might be necessary before mental health providers research NMT. Another participant suggested that the national trend toward adopting only empirically-supported treatments seemed like a marketing scheme to him. He intimated that although NMT might not be an empirically-supported practice yet, its positive results could be measured quantitatively. One participant explained that as Dr. Perry becomes a more prominent figure, research in NMT will follow. She added that there was a territorial quality to research into therapeutic approaches, which could explain the lack of research into NMT. Another participant maintained that there has not been research into NMT for the same reason developmental trauma disorder was not included in the DSM-5; most people wanted simple answers and the world was not yet ready for these ideas. She explained that there were concrete limitations to research into NMT as well, such as lack of resources and support.

One participant suggested that NMT was such a new and qualitative approach to working with traumatized children that it was difficult to research. Participant number six stated that since NMT is tailored to each child, it would be challenging to measure it in a quantitative manner. She stated, "Yeah, it's [NMT] not straightforward." Another participant maintained that clinicians who are interested in NMT and are utilizing it are primarily focused on employing it therapeutically and are not likely to research it.

Training in NMT

Multiple participants discussed training in NMT without being prompted. A few participants explored their experiences of receiving training in NMT. Participant number three explained how receiving training in NMT had impacted her clinical work. "So now I really

understand how developmental trauma can really explain all the symptoms… ” Another participant described her experience of NMT training. “Initially, it was definitely sort of abstract and like, whoo.”

Several participants described their experiences providing training in NMT and developmental trauma theory, and two participants explained that they used NMT as a training tool in the community. They stated that they provide training in NMT and developmental trauma theory to schools, DCF, and groups of mental health providers. Participant number five commented, “We have a contract with DCF to do trauma evals. We’re—and it’s very hard to break into DCF, the model, so I feel like NMT really sold them on it.” This participant believed that these trainings have had positive effects on state documentation, and she felt “like we’re making huge inroads.” Another participant stated that the NMT training materials were well crafted and very useful when conducting evaluations or consultations. She added that in the near future more staff would be trained in NMT. One participant reported having discussions about NMT in staff meetings, and training new staff informally. One participant stated that he provided his staff with periodic training.

One participant commented on lack of training. She stated that she wished she had received more training in developmental trauma and NMT prior to working with this agency. Another participant maintained that more individuals ought to be trained in developmental trauma and NMT.

Relationships and NMT

Without prompting, five participants commented on the importance of relationships in their clinical work, and in NMT. One participant stated that humans can only heal within healthy relationships, and another participant intimated that human connection allowed for healing to

occur. Participant number one maintained, "It is in human relationships that we develop, in whatever direction, it is only within healthy human relationships that we can function well, and it is only within healthy human relationships that we can get healthier." Another participant explained that by providing clients with relationships, the client's brain formed important connections and became healthier. Participant number four commented, "And this is another place where NMT has really shifted my thinking; it just makes sense, it does take a village." She explained:

> And the more hits of consistent, predictable, nurturing contact with an adult where you're being looked in the eye and touched on the shoulder and made to feel important, the better—the more opportunity it will be for that to take hold in your psyche, in your sense of self.

One participant reported that relationships are considered integral within NMT; she noted that often this aspect of NMT was overlooked. Participant number five stated, "I mean, yes, that is part of the NMT model that I think doesn't get talked about as much." She commented, "But you know, relational health and examining that is a huge part of the Metric, and the conversation and the intervention and, um, is a predictor of how well these kids are going to do." She explained that examining relational health and working to improve it was a crucial part of NMT. She stated that she and her staff sought to create as many healthy connections for their clients as possible. One participant reported that many of his clients struggled with poor attachment history. He felt it was part of his responsibility to help clients "sort out" their poor attachments and create good secure attachments; this mode of thinking is consistent with multiple therapeutic approaches, including NMT.

Learning to Use NMT

Although not asked directly, four participants explored their personal experiences of learning NMT. Two participants commented on how difficult it was to learn NMT. Two participants discussed how exciting and invigorating the learning process had been. Participant number four explained that learning NMT required extra time outside of the schedule in which to read and study. She specified, "You know, reading seven articles and doing a fidelity exercise and talking among ourselves about how we're going to infiltrate the agency with this information; it's been a lot." She reported that there had been a bit of miscommunication between the creators of NMT and the center during the learning process, resulting in some subsequent stress.

One participant felt she should have earned a graduate degree in NMT; she stated that many others felt similarly. The same participant commented that the learning process had also been enjoyable and invigorating. Another participant explained that there had been some trial and error when first learning NMT. He maintained that although staff would continue to improve their knowledge of NMT, he felt they were using the model well. He stated that the process of learning NMT had been exciting. One participant observed that even before learning NMT, she and her staff were unknowingly adhering to NMT. She reported that after formally learning NMT, she and her staff understood better why certain interventions were more effective, and they endorsed these interventions even more strongly. Participant number three commented:

> I think back to what would I have done with that 10 years ago and I think I would have done a decent job but I don't think I would have been equipped with the level of confidence and information that I have now.

Tailoring NMT to the Child

Without prompting, four participants described how NMT was tailored to each child client; this is an essential feature of treatment. Two participants stated that there was a certain amount of trial and error involved in choosing which interventions to use with each child; for example, when a sensory and movement-based intervention was needed, some children might prefer yoga to martial arts. Participant number two explained, "Some of it is temperamental, like what matches that kid's temperament. And some of it is trial and error experimentation. And the age of the kid." Two other participants described the various NMT activities and interventions that were available to child clients, including yoga, fitness, animal-assisted therapy, drumming, art, and writing. Participant number six explained, "We do art projects and a lot of these guys are really very artistically inclined... Some of the kids are better at writing and enjoy writing more... We have some dogs that come in... So it's a whole range we have..." The participants explained that each child takes part in NMT interventions that best suit his neurodevelopmental needs at that time. One participant maintained that it was possible to be creative when providing interventions, and not all NMT interventions required expensive community resources.

Collaborators

Although I did not ask it specifically, five participants discussed the importance of collaborating with other providers, families, schools, DCF, and legal advocates. One participant spoke at length about collaboration with yoga instructors, body-based practitioners, martial arts instructors, and animal-assisted therapists. He explained that collaborating with these providers was important for those clients who required interventions that stimulated their lower brain and who were not yet ready for verbally oriented therapy. He mentioned that there are "...two very

creative programs locally that do a combination of things. One of them does equine therapy, and animal assisted therapy, the other does yoga, martial arts." He stated, "We get lots of good results from kids going there, doing those things." One participant, number three, spoke about collaborating with clients' relational systems. "It's all you, the parents, the coaches, the teachers, the neighbors, the grandparents, it's not me, a therapist in an office, it's all you all day every day... I am the facilitator." She described that she spends her time, in part, "developing a web of care and people."

One participant, number two, stated that the center had formed partnerships with legal advocates, DCF, and schools. Another participant also mentioned collaborating with schools. She maintained that schools could be resourceful about helping clients and obtaining appropriate services for them. One participant, number four, explained that she hopes for increased collaboration in the future with various providers, including occupational therapy and sensory integration experts, as well as massage therapists and yoga instructors. She added, "We haven't figured it out [yet]."

Summary

In this chapter, the analysis of the interview transcripts and the themes that arose were presented. Each superordinate theme was presented, and the emergent themes were summarized. Often several direct quotes from participants were presented in support of the superordinate and emergent themes. It was important to allow space for participants' voices to be heard, as the purpose of this research study was to discover clinicians' perceptions of NMT and discuss their experiences of using NMT. In the following section, I discuss each superordinate and emergent theme, and consider implications of these findings for practice and future research.

Chapter 5

Discussion

This research study examined the individual and collective experiences of clinicians trained to use NMT in their work. In the following section, I discuss the superordinate and emergent themes arising from my conversations with the clinicians, and I include an excerpt from my reflexive journal. I also include an excerpt from one's participant's feedback, and I reflect on this feedback. I then consider limitations of this study, clinical implications, and directions for future research.

Using NMT

A prerequisite of participating in this research study was that all participants use NMT in their clinical work. Consequently, all participants were asked to explain how they use NMT. Some participants stated that NMT offered them a different, more hopeful framework for understanding trauma and regulation in their clinical work; many noted that NMT had changed their perspective. NMT offers clinicians a trauma-informed and developmentally sensitive mode of viewing clients' cases (Perry, 2009; Perry & Dobson, 2013). An increased awareness of the impact of trauma on the developing brain allows clinicians to adopt an empathic stance and form realistic expectations of the child. This trauma-informed perspective in turn allows clinicians to educate families, providers, and schools about neurodevelopment and developmental trauma so that realistic goals are set, and disappointment and frustration are reduced. NMT is a valuable lens that can increase sensitivity and compassion in a child's life. NMT offers a novel approach for clinicians to help children who have suffered early traumas, and are notoriously difficult to engage in therapy.

Participants are also using NMT as a tool for consultation and trauma evaluations. They are training DCF staff and providers in the community to consider clinical cases from a neurodevelopmental perspective. This may be a significant shift in paradigm for many mental health professionals, who may have been used to operating predominantly from a cognitive-behavioral orientation, without intensive knowledge of traumatology and neurodevelopment. Using NMT could potentially change how DCF staff approach cases. A child who experiences developmental trauma often has significantly more difficulty than a healthy peer forming attachments and self-regulating; both intimacy and rejection can be triggering (Perry & Dobson, 2013). If DCF staff are increasingly aware of the physiological and psychological effects of trauma on young children, they may be able to advocate differently for the child. If they can appreciate the critical need for safe, consistent caregiving, then perhaps they can emphasize more of a focus on permanency and developmental sensitivity. If DCF staff are aware that a child needs to increase his level of sensory integration and/or self-regulation before he is able to engage in TF-CBT, then staff may be able to advocate for more developmentally appropriate treatment. The result could be better regulated children with healthier attachments and happier families. The participants in this study maintain that using NMT has allowed them to grow as clinicians, and increase their efficacy when working with traumatized children and their families.

Integrating NMT

The participants reported that they easily integrate NMT with varied approaches to therapy, and NMT is successfully integrated into daily activities with clients. Since the proponents of NMT maintain that NMT can and should be integrated with other approaches, it is perhaps not surprising that the participants have found it easy to integrate NMT with their preferred clinical approach. It is interesting to note how there is variety in the way participants

have integrated NMT; NMT merges well with ARC, DBT, and family systems. As NMT is a therapeutic lens, it is appropriate for it to be combined with any other therapeutic approach. It seems likely that the integrated combination of interventions is quite effective clinically.

However, if NMT is being integrated with different forms of therapy, in various ways, and is tailored to the preferences of therapist and client, it cannot be affirmed that NMT is standardized. The variety of NMT treatment at the center is due to the nature of the NMT model itself. NMT is a flexible model that allows for many variations in treatment, although all NMT treatment is trauma-informed and neurodevelopmentally sensitive. Unlike standardized CBT treatment, NMT treatment could potentially look very different for each case, depending on what percentage of integration and tailoring has occurred. NMT is versatile; it allows for integration and flexibility, which participants claim is very useful clinically. It cannot be denied, however, that this same integration, and subsequent variety of treatment, also complicates standardization of NMT treatment, rendering quantitative research on its effectiveness somewhat challenging.

Positive Effects of NMT

All participants spoke positively about the effects NMT has had on their clients. For these participants, NMT has led to a decrease in problematic behavior, a decrease in negative judgment, and an increase in empathy and empowerment. For some, nothing has worked as well as NMT. It is notable that there has been a marked decrease in the number of physical restraints since NMT has been utilized in residential care. It is inspiring to hear that children are better able to self-regulate after exposure to NMT. It is encouraging to hear that participants have noticed many positive results that NMT has had generated for staff, clients, and clients' families. NMT is reportedly validating and empowering for all involved. Work with traumatized children and their families is notoriously difficult, regardless of the theoretical approach utilized, so it is

quite encouraging to hear that NMT's neurodevelopmentally sensitive approach has allowed these clinicians to achieve successful outcomes and increase their confidence in their clinical work. All of the participants utilize some form of NMT-integrated treatment, and maintain that NMT's effects have been quite positive.

The fact that NMT treatment is integrated with other forms of treatment, however, renders it difficult to determine if the successful outcomes are due strictly to the addition of NMT or to the combination of therapeutic approaches. As mentioned previously, the blending of NMT with other approaches appears to be useful and clinically effective. This blending somewhat complicates accurate assessment of NMT's positive effects on staff, clients, and clients' families. However, it would be possible to overcome this obstacle to obtaining quantitative evidence, in addition to qualitative support, for NMT's positive effects. For example, in a quantitative research study one group of clients could receive combined NMT and ARC treatment over a six-month period, and one group could receive ARC treatment alone; results could then be compared and analyzed.

Overall, the experience of clinicians using NMT was overwhelmingly affirmative. These clinicians offer qualitative evidence that NMT is an effective approach to therapy with traumatized children and their families that leads to an increase in positive effects and a decrease in problematic client behaviors.

Positive Aspects of NMT

Multiple participants praised NMT. Participants discussed how successful the center had been using NMT; they have had better outcomes, and children are reportedly feeling more safe and secure. All participants maintained that NMT has multiple positive aspects in addition to positive effects on clients and staff.

Why do these clinicians find NMT to be so useful? Is it NMT's emphasis on the brain and neurodevelopment that is appealing and comforting to clinicians and families alike, and if so, why? It is probable that the scientific elements of NMT lend credibility, structure, and therefore comfort. Perhaps NMT's approach, featuring the schematic representation of the NMT Functional Brain Map, renders the disorganized early lives of traumatized children more concrete and visually manageable. NMT's scientific base lends credibility and structure to the daunting task of helping a traumatized child manage his symptoms and create healthy relationships. It may also be that the proponents of NMT have created an evidence-based approach that encompasses so many useful elements and effective interventions, such as yoga or animal-assisted therapy, that the combined ingredients make it successful.

Is it NMT's combined emphasis on neurodevelopment, self-regulation, and relationships that makes NMT a well-rounded approach that integrates successful therapeutic elements into one model? This combined emphasis makes NMT an appealing model to many clinicians. These aspects make NMT a comprehensive, attractive, and hopeful approach to therapy. As one participant remarked, NMT offers hope where hope had not existed previously. NMT proponents believe that it is possible to help a traumatized brain improve its overall functioning, although the process may be slow and must be intentional. The possibility of helping a traumatized brain create new neuronal connections, and learn how to self-regulate and form attachments to others, is inspiring. Providing mental health services to traumatized children can often be discouraging, in part because of the enormity of the damage caused by early and ongoing trauma, multiple foster placements, broken attachments, environmental factors, and the flawed system of mental health services itself. Hope that the effects of trauma may be undone is powerful. To the participants in this study, NMT offers hope for a traumatized child's future, as

well as a useful framework for conceptualizing difficult cases, and concrete steps to follow to improve a child's overall functioning.

Disadvantages of NMT and Barriers to Implementation of NMT

Although some participants were unable to list any disadvantages to utilizing NMT, others were mindful of several negative aspects or barriers to implementation– namely cost, context, elitism, personal limits, and systemic issues. Many of these issues do not seem to be particular to NMT. Working around managed care is a concern for most therapists working in this country, regardless of their theoretical orientation. Context has a significant impact on the efficacy of most if not all theoretical approaches, which are naturally more effective in some settings and less effective in others; the influence of context on therapeutic efficacy is not specific to NMT. Cost of additional training, however, is specific to NMT. As noted previously, when compared to the cost of ARC training, NMT is more expensive. In addition, some participants mentioned that being trained in NMT was as difficult and lengthy as gaining a graduate degree; it seems probable that many community mental health centers will not be able to dedicate the necessary time or funds to training their clinicians in NMT.

Do the benefits of NMT outweigh its cost? The participants claim that they do. If a mental health center has the necessary resources, NMT may be very useful. It seems that, ideally, NMT would be an appropriate approach for well-funded, well-staffed mental health centers that work with traumatized children and their families. NMT has a compelling evidence base, and can be integrated creatively into other approaches. Although they discussed multiple disadvantages to NMT, the participants in this study also endorsed its effectiveness and feasibility. However, NMT may not be a feasible approach for community mental health centers with limited resources, as they may not be able to adopt NMT, or implement it effectively, due to

issues regarding cost and training of staff.

Dr. Perry

Many participants commented on the appeal of Dr. Perry, his great charisma and intelligence. It seems logical that clinicians who have spent years learning and training in NMT would have high opinions of the model's creator. It was necessary for many of them to meet and work directly with Dr. Perry while learning NMT. These clinicians became accredited in NMT with Dr. Perry's assistance and training. It is therefore no surprise that all of the participants who mentioned Dr. Perry spoke about him, without prompting, in a very positive manner.

It is, however, interesting to note that Dr. Perry's charisma, intelligence, and personal presence surfaced easily during a discussion of the NMT model. It seems, on some level, that Dr. Perry's persona is intricately linked to the model's success. Dr. Perry is a public presence. He is internationally respected as an expert in working with traumatized children. He has been involved in working with children in the aftermath of the Columbine, Colorado school shootings, the Oklahoma city bombings, and the Branch Davidian seige (CTA, 2012; Perry, 2006). He has also worked with survivors of the September 11 attacks and Hurricane Katrina (CTA, 2012). Dr. Perry has published over 400 journal articles and book chapters. He has appeared on the Today show and the Oprah Winfrey show, as well as ABC and CNN news. He has presented on neurodevelopment, youth violence, and child trauma to the White House Summit on Violence and the U.S. House Committee on Education. Dr. Perry is currently the senior fellow at The Child Trauma Academy (CTA, 2012). Dr. Perry has a long list of professional accomplishments and a notable public persona. It seems likely that Dr. Perry's public presence and compelling personal qualities are also responsible for enthusiasm about his model.

The Metric/Brain Map

The Metric offers clinicians a unique opportunity to map a child's levels of functioning in a concrete, tidy, comprehensible way; this is truly unique to NMT, and is reported to be quite helpful to many staff and families. It is also important to note that the NMT Metric is a sort of short-hand visual representation of a child's capabilities, it is not an actual map of the brain, nor is it a map of the brain's functions. A child's inability to self-regulate, interact with others, use language, abstract thinking, or problem solving may allow clinicians to infer which parts of the brain may or may not have been affected by early trauma; but in no way is the brain map anything like an fMRI or a neuropsychological evaluation. It could also be argued that the NMT Metric lacks the positive psychometric properties of many neuropsychological measures, although the NMT Metric is not intended as a replacement for these measures. In addition, the Metric may or may not correlate with these measures. At the center, use of the Metric and neuropsychological measures varies; it seems that the Metric may be more difficult to use than most neuropsychological measures. In addition, since the Metric is not yet a standardized measure, clinicians at the center use standardized measures such as the Vineland Adaptive Behavior Scale (Vineland-II) in tandem with the Metric; the Vineland-II is reportedly quite compatible with the Metric, as it is also a developmental, functional measure.

Learning how to accurately utilize the Metric seems to be a complicated and lengthy process, with many opportunities for error. It seems to be a complex assessment system. It seems some clinicians have been trained to use the NMT Metric, and others have not; some utilize NMT to conceptualize cases and recommend interventions only. Participants who have been trained to use the Metric reported using the Metric with varying frequency. If the Metric is being used with variable frequency, by some but not all of the clinicians trained in NMT, what

are the implications? If clinicians are using the Metric differently, and with varying frequency, does their fidelity to the NMT model vary accordingly? Should all clinicians who have been trained to use the Metric be using it on every client? Are clinicians who have not been trained to use the Metric considered to be truly utilizing NMT, if they are not involved in all aspects of the model?

It seems that Dr. Perry and clinicians at the center have made significant efforts to increase fidelity, and one participant specifically stated that the center's overall level of fidelity on the NMT Metric was quite good. Participants have been through extensive training with Dr. Perry during the accreditation process, and they participate in fidelity exercises twice a year in order to ensure an acceptable level of fidelity. It does seem, however, that there is great variability in application of the NMT approach, and ideally, it seems that the Metric ought to be used for every case involving NMT. I can appreciate the difficulty of training all clinicians to use the Metric consistently, and it simply may not be feasible to use the Metric in a standardized manner. The complexity of the Metric itself most likely increases the challenge of using it in a standardized manner, and the proponents of NMT may wish to address this issue.

Measuring Progress

All participants sought to measure or track client progress. Some used quantitative measures, and occasionally the Metric. Some used qualitative methods, such as case review and parents' feedback. One participant, working on an inpatient crisis unit, qualitatively tracked clients' progress over time by ensuring they were alive. Many of the participants reported that they had witnessed significant improvement in their clients over time after NMT treatment, and they were able to track client progress in many ways. It is encouraging to note that clients seem to be experiencing a decrease in symptomology and they are increasing their overall functioning.

It is interesting to note such variety in participants' preferred mode of measuring progress. It must also be stated that due to varying degrees of NMT integration, and such a wide variety of measurement tools, it is difficult if not impossible to know if client progress is due specifically to NMT; accurately identifying effective factors in treatment is a challenge for any clinician utilizing an integrated approach, and participants at the center use integrated approaches, with NMT as one component of treatment. Progress was measured and clients improved, but why exactly? Due to the different forms of measurement, it is difficult to compare all of the clients who received NMT and make a general statement regarding NMT's effects on these clients. However, all participants measured client progress, and maintained that NMT had positive effects on their clients. These participants did not rely on clinical judgment alone; they used multiple forms of quantitative and qualitative measures to track and assess client progress.

Research on NMT

Many participants maintained that NMT has not been extensively researched due to political motives. Others suggested that as NMT is tailored to each child it would be difficult to research it using quantitative methods; these participants believed that NMT had not been researched because its qualitative aspect rendered it difficult to research. While I agree that the effects of NMT are difficult to measure, especially when it is integrated with other therapeutic approaches, I still find it surprising that 20 years after its conception, such limited outcome research has been done on NMT. I find it difficult to believe that the Child Trauma Academy or the international proponents of NMT lack the resources to fund multiple research projects. So why haven't they?

I am mindful of how NMT is tailored uniquely to each child in a different way, and typically is integrated with another approach. These elements may make it challenging to assess

NMT's efficacy. However, it could be feasible to quantitatively measure the effects of NMT on reduction of problematic symptoms over time as compared to ARC, family therapy, or CBT, even if used in concert with some or all of these modalities. Elements of NMT could be isolated and further researched for efficacy, as certain elements of NMT are already considered evidence-based. For example, animal-assisted therapy and yoga have been shown to reduce anxiety in traumatized children (Dietz, Davis, & Pennings, 2012; Spinazzola, Rhodes, Emerson, Earle, & Monroe, 2011). Alternatively, the NMT Metric could be compared to neuropsychological measures or even an fMRI. It is reported that Dr. Perry is in the process of researching how the Metric correlates with a single photon emission computed tomography (SPECT) scan (Perry & Dobson, 2013), although as yet, there are no published results; this would be useful and interesting research as well. NMT has a compelling evidence-base, but lacks quantitative research indicating its efficacy. I cannot help but feel that the proponents of NMT have an ethical duty to prove its efficacy, especially as NMT has already been in use for the last two decades, and centers across the country are regularly billed for trainings.

Training in NMT

All participants discussed their experiences of providing training or receiving training in NMT. Many participants provide NMT and developmental trauma training throughout the state to various provider groups, schools, and DCF. Formal and informal training in NMT is available to staff at the center. Training in NMT has allowed for a greater understanding and defense of the effects of developmental trauma. Consequently, I maintain that more training should be provided, in multiple settings. Providing psychoeducation on the significant effects of early trauma on children could impact how these children are cared for, by teachers, DCF workers, and other providers. Training providers, and the community at large, to develop increased sensitivity

to the neurodevelopmental levels of children who have suffered trauma could be an important step in reducing stigma and increasing empathy for these children.

The clinicians at the center have worked hard to receive training in NMT and then provide training to staff. Regarding the training of staff, I wonder if training in NMT must always include training on the NMT Metric, as it seems it ought to. Some participants have not been trained extensively in the Metric, and others do not use it consistently. Does this affect the center's overall fidelity to the NMT model? It seems it must. Some staff use NMT interventions and conceptualize cases from an NMT perspective without using the Metric. Is it necessary to train all staff who utilize NMT to also use the Metric? What are the implications for future implementation of NMT in other centers if it proves to be too complicated to train all staff members to use the Metric? I appreciate the impossibility of training all staff in all aspects of every therapeutic approach, and I realize that the NMT training is ongoing. However, it seems the training of staff in NMT is currently somewhat inconsistent, as evinced by variable application of central elements of the model.

Relationships and NMT

Multiple participants discussed the importance of relationships to healing and growth. Two participants discussed the relational aspect of NMT. All participants felt that relational health was necessary to good development. Relational health is crucial to proper neurodevelopment, secure attachment, and consequent emotional and psychological health. NMT maintains that healthy relationships affect the brain in a positive way, and NMT clinicians therefore seek to increase healthy relationships in a child's life. NMT is not the only therapeutic approach that emphasizes the importance of relationships, but it is the only one that advocates for relational health specifically as a way to regulate the brain, and thereby decrease problematic

behaviors. The ascendance of neuroscience has been very validating for those individuals who are especially enthusiastic knowing there is a brain-based explanation for the healing power of love.

Perhaps one of the most appealing aspects of NMT is its dual focus on neurodevelopment, and neurodevelopment within a relational context; as one participant observed, it is in healthy relationships that humans grow and become healthier. Within a relational context, whether that relationship is with a parent or a therapy dog or both, a child can improve his ability to self-regulate, attune, and attach. Secure relationships allow children to feel mirrored, valued, and loved. Secure relationships allow traumatized children to create new neuronal pathways that gradually reinforce attachment, empathy, love, awareness of self, and awareness of others.

Learning to Use NMT

Participants found that learning NMT was an extensive and difficult process. It is notable that a few participants felt as if they ought to have received a graduate degree in NMT. However, participants also found the process to be exciting, invigorating, and validating. Participants were inspired by the NMT approach, and they were willing to dedicate many extra hours over many months to learn how to use NMT appropriately. It seems that learning NMT has been more a process of integration rather than a paradigm shift for the whole center. The center is now accredited in NMT, and many clinicians at the center currently use NMT in their clinical work. It is likely that learning to use NMT and becoming accredited in NMT were two separate experiences for participants, with the accreditation process being the more arduous due to extensive training and fidelity exercises.

Learning NMT has been unique for each participant, since many of the participants are using NMT in different ways in various settings; some even feel they had unknowingly been using some of the principles of NMT prior to learning the model. It is noteworthy that even with informal trainings in staff meetings, and extensive center-wide training from Dr. Perry, the application of NMT at the center still seems quite idiosyncratic. Perhaps over time this will change, and perhaps instead this variety in application of NMT is simply a hallmark of the NMT model itself. NMT is many things; it is first and foremost a trauma-informed lens, and it is also a comprehensive assessment tool, as well as a host of neurodevelopmentally sensitive interventions. Multiple participants at the center utilize all aspects of the NMT approach, and some do not; these participants have perhaps not yet had access to learning all aspects of NMT. Several participants expressed a desire to make NMT accessible to more clinicians at the center in the future. For the participants at the center, the process of learning NMT and fine-tuning their skills will undoubtedly continue. It may be interesting to observe if over time there is increased homogeneity in how clinicians at the center utilize NMT.

Tailoring NMT to the Child

Multiple participants discussed how NMT is tailored to each child. The context of the treatment also impacts how treatment is tailored. For example, equine therapy may be available in rural New England, but not in a low-income urban center. To some degree, the environment and community surrounding the child will determine which interventions may be recommended. It seems that the key to tailoring NMT interventions to a child is determining what techniques are best suited to both the child and the environment. Tailoring the treatment to the child and offering multiple therapeutic activities naturally increases the efficacy of the overall treatment; this is a strength of NMT. Children treated with NMT participate in many therapeutic activities

during the week, such as yoga, dance, and animal-assisted therapy in addition to time spent with the NMT therapist. The delimiting factors include creativity of the therapists, geography, practice finding the right fit for a given client, and awareness of neurodevelopmental progress; all of these also serve to create tremendous variability in the services the child receives.

The specific tailoring of treatment to the neurodevelopmental needs of the child client is part of what renders NMT an effective approach. Few other therapeutic approaches consider the neurodevelopmental level of the child so carefully, and advocate for interventions targeted to the child's neuropsychological and psychological needs. Although there may be similarity among NMT cases, each case is truly unique. Every NMT Metric will be different, depending on a child's developmental history, relational health, and presenting problems. The carefully constructed Metric leads to varied and specific treatment recommendations that are especially appropriate for the child client, as they are based on his needs and preferences, as well as the availability of services in his environment and community. This careful tailoring of interventions to the child's needs most likely has great impact on the success of these NMT interventions and the overall improvement of the child client.

Collaborators

Multiple participants addressed the importance of collaborating with varied groups and individuals, including schools, families, DCF, legal advocates, animal-assisted therapists, and body-based practitioners. Collaboration with other practitioners is an established and useful part of NMT, as many NMT interventions require the expertise of other practitioners, such as yoga instructors, or animal-assisted therapists. Collaboration among individuals involved in a child's life is critical for successful treatment, regardless of theoretical orientation. It is important to maintain a high level of consistency across all environments present in a child's life in order to

reinforce positive change and decrease problematic behaviors. Treatment is more likely to succeed if a child's teachers, parents, peers, and mental health providers are aligned in their approach and objectives. An essential aspect of any therapist's role is working toward harmony of purpose with family members and other providers in the child's life. The center already had a very strong presence in the community before adding NMT to its service delivery model; the center was very well suited to the community collaboration elements of NMT from the onset.

One participant addressed a growing need to increase collaboration with other providers, especially those providers so often involved in NMT treatment, such as yoga practitioners, occupational therapists, and animal-assisted therapists. Increased collaboration with providers who supply services to child clients at the center may increase the overall efficacy of NMT in these cases. More frequent collaboration with these providers seems likely to occur as NMT implementation increases at the center.

Summary

During the analysis of the interviews, multiple superordinate themes arose. Participants discussed how they used NMT and how they integrated NMT. Participants disclosed what it was like for them to learn NMT, receive training, and provide training in NMT; their experiences of learning and using NMT differed. They described the significant positive effects that NMT had on clients, families, and staff- specifically, a decrease in problematic behaviors and an increase in empathy, hope, validation, and empowerment. They stated that they had witnessed improvement due to NMT. Participants discussed positive aspects of NMT. Participants reported that NMT offered an increase in credibility, accessibility, and hope. They maintained that NMT was a parent-friendly model, which also validated the work they did. Participants praised NMT. They kept track of client progress over time in a variety of ways, using

quantitative and qualitative measures, and they reported witnessing positive changes in their clients. Participants also explored the disadvantages to working with NMT, and mentioned potential barriers to its implementation. Potential issues with NMT included cost, length and difficulty of training, and importance of context. Participants wondered if NMT were an elitist model that would prove difficult to adopt. Participants discussed systemic issues that could act as barriers to the spread of NMT. Participants also discussed topics that were unsolicited, such as Dr. Perry, the Metric, the importance of relationships, and the importance of collaborators.

All participants spoke positively about NMT and its effects on clients and staff. Most participants tracked their clients' progress over time and found improvement after NMT; notwithstanding the impossibility of ascertaining client progress due solely to NMT. Although participants discussed the difficulty of learning NMT and certain disadvantages, overall, participants were enthusiastic about NMT. Participants had integrated NMT into their clinical work, and they believed that NMT had made a positive impact. Indeed, participants were enthusiastic about NMT, and offered an evidence-base for its application at the center, even though they are far from being able to systematically and empirically validate their qualitative experiences of its efficacy.

Excerpt from my Reflexive Journal

As I conducted interviews, I was mindful of my enthusiasm for NMT. I was impressed with the participants and I admired their clinical work. I appreciated their willingness to dedicate time to my research study. Their enthusiasm for NMT was contagious and I was happy to hear praise for NMT. I was pleased that the data seemed to indicate that NMT was effective and responsible for noted client improvement. Although the participants noted multiple potential disadvantages to working with NMT, it seemed to me that the overall tone of their feedback on

NMT was positive. It was not until I had returned home, and transcribed and analyzed the transcripts that I was better able to hear some of their frustration with learning NMT, the cost of the trainings, and how difficult it might be for other agencies to invest years into perfecting implementation of NMT. I noted my positive bias and thoroughly analyzed the transcripts. However, at the end of my analysis, it still seemed to me that generally participants felt positively about NMT, and were enthusiastic about its effects. Although they noted the difficulties involved in adopting NMT, they also seemed to find the process, overall, to be invigorating and worthwhile.

When conducting a review of relevant literature for this study, I relied heavily on articles written by Dr. Perry, at the expense of other authors. I was unaware of this bias in favor of Dr. Perry's written work until dissertation committee members noted it and informed me. I then conducted more extensive research and discovered multiple useful, informative sources (e.g., Dante Cicchetti, Daniel Siegel, Bessel van der Kolk). I was surprised that I had not noted how my bias had influenced my literature review. As I edited the first chapters of my dissertation, and wrote the final two, I was mindful of my inclination to gather information solely from sources associated with Dr. Perry; I remained wary.

One Participant's Feedback

When I submitted this dissertation for committee review, I also sent a copy to a participant who had asked to read the dissertation. I chose to send a draft of the dissertation rather than a finalized copy so that it would be possible to correct any inaccuracies regarding the center that might have been present; it also allowed the participant an opportunity to voice her opinions on topics raised in the dissertation. The participant thanked me for the opportunity to read the dissertation and comment on it. A selected excerpt of the participant's feedback is

provided in the following section.

> As you state, NMT is a framework and an assessment tool, and I think this can be confusing for people. It is not a therapy, but a lens. This means there is no problem with integrating other models. In our current world of EBPs we are asked to cookbook out our models so we can show data about a specific technique. I think any of us who have been doing this work for awhile and have seen things evolve and models come and go, think there is a certain level of bogusness to this standard. A good and experienced therapist is continually blending all the knowledge and training that has come before. At the center I don't know where NMT begins and ARC or relationships or horses end because it all blends together in our knowledge base. So with NMT as a framework, it's a big house with lots of room for the party. I realize you are trying to make a case for NMT that is necessary and an important effort and we have work to do BUT it's a different thing to name that the world wants simplicity even when something is not simple. NMT is a lens —how do you measure a way of seeing the world? .... The blending is desirable for us. Just not desirable in the research world. Now the Metric—that is a different matter. That needs to be standardized and CTA is in the midst of that. Much to be done there.

Reflection on Participant Feedback

I thanked the participant for her feedback, and told her that I appreciated her comments. I especially appreciated how her comments were consistent with issues I had been struggling with regarding measuring the effectiveness of NMT. NMT is an approach to therapy, it is a lens and a framework; as such, it is impossible to measure quantitatively. However, elements of NMT, such as the Metric or specific interventions, can and should be quantitatively assessed. I agree that a good therapist often integrates clinical knowledge and then uses the most appropriate

interventions for the client. I agree that the blending of therapeutic approaches or models can be clinically desirable. I can understand and appreciate the point of view that there is a "certain level of bogusness" involved in standardizing models so that a specific technique can be assessed. Certain aspects of any therapeutic model are difficult to standardize and measure, and a lack of quantitative research does not automatically indicate that there is a lack of efficacy. I also believe that there exists a very real difference in worldview among clinicians who are involved in practice and those who are involved predominantly in research. As one participant pointed out, often the clinicians who are providing therapy are unlikely to be the clinicians involved in conducting research. I am not suggesting that the participants at the center must produce quantitative research providing evidence for NMT's efficacy. However, Dr. Perry and the clinicians at CTA may wish to do so. I maintain that it is necessary to provide evidence of efficacy when possible. I believe there is an ethical responsibility to consider, when providing therapeutic services to the public.

Limitations

Although it was possible to interview seven mental health professionals who are using NMT in their clinical work, five of these individuals were part of the core group at the center that were first trained in NMT. These individuals were responsible both for introducing NMT to the center, and for subsequently training other staff members in NMT. These individuals therefore may have had a positive bias toward NMT as they were potentially more invested and interested in NMT than other staff members. These individuals were also the first six individuals who agreed to be interviewed. I had hoped to interview three other participants who were not part of the center's core NMT group, in addition to these six participants. A few scheduled participants were ultimately unavailable for interview. Ultimately, I was able to interview only two other

individuals who were not part of the original core NMT group. It proved difficult to find individuals who were not part of the core group, who used NMT directly in their work, and who were available and interested in participating in this research study. I was aware that it might prove difficult to recruit participants when I chose to conduct research at a community mental health center. Due to the intense nature of community mental health work, many mental health professionals do not have a surplus of available time during which they can be interviewed. However, it must be noted that, with this "sample of convenience," the group of interviewed mental health professionals lacks variability, and is not as great a cross-section of clinicians as I had hoped for. This is a potential limitation to this study.

Another limitation is the lack of diversity among participants. All participants were Caucasian, highly educated (at least 16 years of education), and lived in the same Northeastern state providing therapeutic services to children and adolescents. All were employed directly or indirectly by the same center, and it is probable that they shared similar ideological beliefs. This regional selectivity also limited the available menu of interventions; it might be interesting to compare the strategies employed by rural versus urban, or Caucasian versus more ethnically diverse clinicians.

Many participants that were interviewed reported integrating NMT with other therapeutic approaches, including ARC, DBT, and family systems. The creators of NMT maintain that NMT can be successfully integrated with other approaches, and one participant maintained that NMT was not intended to be used alone; this participant's observation is consistent with Dr. Perry's consultation. NMT lends itself to integration with other theories. Some participants used NMT as a framework. Some participants used NMT as an assessment tool, and utilized interventions from other therapeutic models. There was some variation among participants in

how and how often they employed NMT. In addition, each participant may have potentially relied on NMT more in certain cases and contexts than in others. It is therefore difficult to accurately assess how much of the client improvement reported by participants may be attributable solely to NMT, and not to a combination of therapeutic approaches and factors. This is a notable limitation of this study, which perhaps reflects a lack of clarity in the model itself. Ideally, it seems that NMT ought to be used as an assessment tool, a therapeutic framework, and a source of interventions; however, in practice, NMT is used in various ways, including parts of each of these elements.

A further limitation of this study is that it shed little light on the singular contribution of NMT to trauma healing. Indeed, participants were generally so enthusiastic, and had trained so hard, that their positive expectations may have biased them in NMT's favor. However, it is difficult to know definitively how much client improvement may be attributable to NMT, or the skilled, hopeful clinicians, or the intensive web of interventions available to clients at the center –or to a complex interplay of all of these elements.

As this research study is a qualitative study, it may not be considered as persuasive as quantitative evidence for the efficacy of NMT. There is an increased emphasis on quantitative empirical studies and evidence-based practices in both research and clinical settings. The qualitative nature of this research study limits broader generalizations about NMT. In addition, this research study is the first qualitative research study to be conducted on NMT; its findings are therefore preliminary and exploratory. However, the findings from my research can serve as an encouraging guide to other mental health professionals who integrate or seek to integrate NMT into their clinical work.

Clinical Implications

Although the small sample size and the qualitative nature of this research study render it difficult to generalize from the results, the results of this research study may still aid other mental health professionals and agencies that utilize or seek to utilize NMT. In this research study, clinicians who use NMT discussed their personal experiences of working with NMT. The majority of clinicians praised NMT. They found it to be effective, hopeful, accessible, and well received by clients and their families. Participants were enthusiastic about NMT and they believed in its efficacy. The nature of NMT and its integration with other approaches makes it very difficult to determine if this approach is in fact effective on its own.

However, these results suggest that implementation of NMT may change how mental health professionals approach clinical work with traumatized children. Adopting a neurodevelopmentally sensitive approach to treatment allows for treatment that is tailored to a child's neurodevelopmental level, providing him with activities that actually help regulate his brain. NMT is currently the only therapeutic approach that emphasizes brain regulation through both relationships and neurodevelopmentally appropriate activities; this unique approach seems to have an added effect on clinician confidence and client progress. NMT's emphasis on both brain regulation and relationships allows clinicians, providers, and families to view cases from a holistic perspective. Adopting an NMT framework, and providing NMT psychoeducation on developmental trauma, allows providers and families to comprehend why a child engages in problematic behaviors, thus increasing empathy and reducing negative bias against the child. Participants in this study related that NMT was effective. The implications of this affirmation are that NMT can succeed where other trauma-informed treatments fail, due to its unique approach. Therefore other mental health centers may benefit from similarly investing in training

clinicians in the NMT model.

Other mental health centers interested in adopting NMT could benefit from the results of this research study. Participants have spoken at length about their experiences of NMT's efficacy. Participants maintain that overall NMT is effective, and they are enthusiastic. The information gained from clinicians' perceptions of NMT would inform and educate others about the process of agency-wide adoption of NMT. Other mental health centers would benefit from an increased understanding of the risks and benefits of implementing NMT. Consequently, clinicians would be able to make informed decisions about choosing to utilize NMT in their clinical work, and the range of ways it might complement their assessment strategies, theoretical formulation, and selection of interventions.

Directions for Future Research

As I conducted this qualitative research study, I became aware of multiple future projects that could be developed. In this dissertation, I examined mental health professionals' experiences of NMT; it would be beneficial to examine child and family clients' qualitative experiences of NMT through qualitative methods. Further, and as mentioned throughout, quantitative research on NMT is still quite scarce. It would behoove proponents of NMT to conduct well-designed quantitative research studies on the efficacy of NMT in various settings. It is important to determine if NMT is a valid and useful mode of treatment for traumatized children, comparable to, or more effective than, others on the NCTSN list (2011).

NMT is currently utilized nationally and internationally in group homes, inpatient settings, and outpatient settings. It would be useful to have evidence that, as participants suggested, NMT is more effective in some settings (e.g., a group home), and less useful in others (e.g., an inpatient crisis unit). It would also be useful to learn if NMT is equally effective across

diverse populations; or if it is particularly effective in the United States, or in other countries.

This qualitative research study indicates that NMT has positive effects on child clients and therapists alike. Quantitative research is still indicated to help NMT gain more concrete evidence, and subsequent support. Studies may quantitatively examine how NMT treatment ameliorates the most vexing symptoms of complex trauma including dysregulation, acute anxiety, and severely problematic behavior. In addition, a longitudinal study of child clients treated with NMT, in different contexts, would prove interesting. Such a study would seek to discover, in part, if the positive effects of NMT are context-specific (e.g., are positive effects from NMT only maintained if the environment remains highly structured, as in a group home).

Conclusion

Millions of children endure child abuse and neglect in this country. Without support, they remain our most vulnerable citizens. Although there are multiple forms of treatment available, none alone has proved itself to be the most effective. With the ascendance of neuroscience in this century, it is not surprising that a brain-based protocol like NMT has gained rapid recognition, and has stimulated such high hopes and staunch support. Indeed, the participants of this study endorse NMT's efficacy. There are many future research studies that may be conducted on NMT's effectiveness, in addition to the qualitative support described here. It is my hope that this qualitative research study on NMT's efficacy and feasibility may catalyze further research into the efficacy of NMT. It is my hope that this dissertation will serve as a first step on the journey to adding an important brain-based therapeutic approach to NCTSN's list (2011) of empirically supported trauma-based therapies and promising practices.

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Appendix A: Empirically Supported Trauma-Based Therapies and Promising Practices

Name of Intervention	Targeted Populations	Modality
Adapted Dialectical Behavior Therapy for Special Populations (DBT-SP) (2012) (PDF)	8-21; both males and females; for youth experiencing a wide range of traumas	individual
Alternatives for Families - A Cognitive Behavioral Therapy (AF-CBT) (2008) (PDF)	School-age children; for youth experiencing a wide range of traumas	individual, family
Assessment-Based Treatment for Traumatized Children: Trauma Assessment Pathway (TAP) (2012) (PDF)	0-18; both males and females; for children who have experienced a wide range of traumas	individual, family, systems
Attachment, Self-Regulation, and Competence (ARC): A Comprehensive Framework for Intervention with Complexly Traumatized Youth (2012) (PDF)	2-21; both males and females; for children, caregivers, and systems that have experienced a wide range of traumas	individual, family, systems
Child Adult Relationship Enhancement (CARE) (2008) (PDF)	Children of all ages and their caregivers; both males and females	family, systems
Child and Family Traumatic Stress Intervention (CFTSI) (2012) (PDF)	7-18; both males and females; for parents and children who may have complex trauma histories	individual, family, systems
Child Development-Community Policing Program (2007) (PDF)	0-18+; both males and females; for children and families in the aftermath of crime and violence	individual, family, systems
Child-Parent Psychotherapy (CPP) (2012) (PDF)	0-6; both males and females; for youth who have experienced a wide range of traumas and parents with chronic trauma	individual, family, systems
Cognitive Behavioral Intervention for Trauma in Schools (CBITS) (2012) (PDF)	10-15; both males and females; for children who have experienced a wide range of traumas	individual, family, systems

Combined Parent-Child Cognitive-Behavioral Approach for Children and Families At-Risk for Child Physical Abuse (CPC-CBT) (2009) (PDF)	4-17; both male and female; for families with a history of physical abuse and inappropriate physical discipline/coercive parenting strategies	individual, group, family
Combined TF-CBT and SSRI Treatment (2007) (PDF)	10-18; females	individual, family
COPE - Community Outreach Program - Esperanza (2007) (PDF)	4-18; both males and females; for traumatized children who are presenting with behavior or social-emotional problems	individual, family
Culturally Modified Trauma-Focused Treatment (CM-TFT)(2008) (PDF)	4-18; both males and females; Latino/Hispanic; for youth who have experienced a wide range of traumas	individual, family
Family Advocate Program (2005) (PDF)	18-70; both males and females; for youth who present with anxiety, depression, PTSD symptoms, and/or traumatic loss	family
Forensically Sensitive Therapy (2005) (PDF)	4-17; predominantly female; for youth presenting problems ranging from anxiety and depression to risk-taking behaviors and functional impairment. Program is designed for a mental health clinic.	individual, family
Group Treatment for Children Affected by Domestic Violence (2007) (PDF)	5-no upper limit; both males and females; for children and their nonoffending parents who have been exposed to DV	group, family, systems
Honoring Children, Making Relatives (2007) (PDF)	3-7; both males and females; for American Indian and Alaska Native children	individual, family

Honoring Children, Mending the Circle (2007) (PDF)	3-18; both males and females; for American Indian and Alaska Native children	individual
Honoring Children, Respectful Ways (2007) (PDF)	3-12; both males and females; for American Indian and Alaska Native children	individual
Integrative Treatment of Complex Trauma (ITCT-C, ITCT-A) (2008) (PDF)	2-21; both males and females; for Hispanic-American, African-American, Caucasian, Asian-American; for youth who may have complex trauma histories	individual, family, systems
International Family Adult and Child Enhancement Services (IFACES) (2012) (PDF)	6-12; both males and females; for refugee and immigrant children who have experienced trauma as a result of war or displacement	individual
Modified Dialectical Behavioral Therapy with Developmentally Disabled Children (2005) (PDF)	10-14; both males and females; for youth in day treatment program, developmentally disabled trauma survivors of child abuse, and children with symptoms of PTSD, anxiety, depression, and disruptive behavior disorders	individual, group
Parent-Child Interaction Therapy (PCIT) (2008) (PDF)	2-12; both males and females	individual, family, systems
Psychological First Aid (PFA) (2012) (PDF)	0-12; both males and females; for individuals immediately following disasters, terrorism, and other emergencies	individual

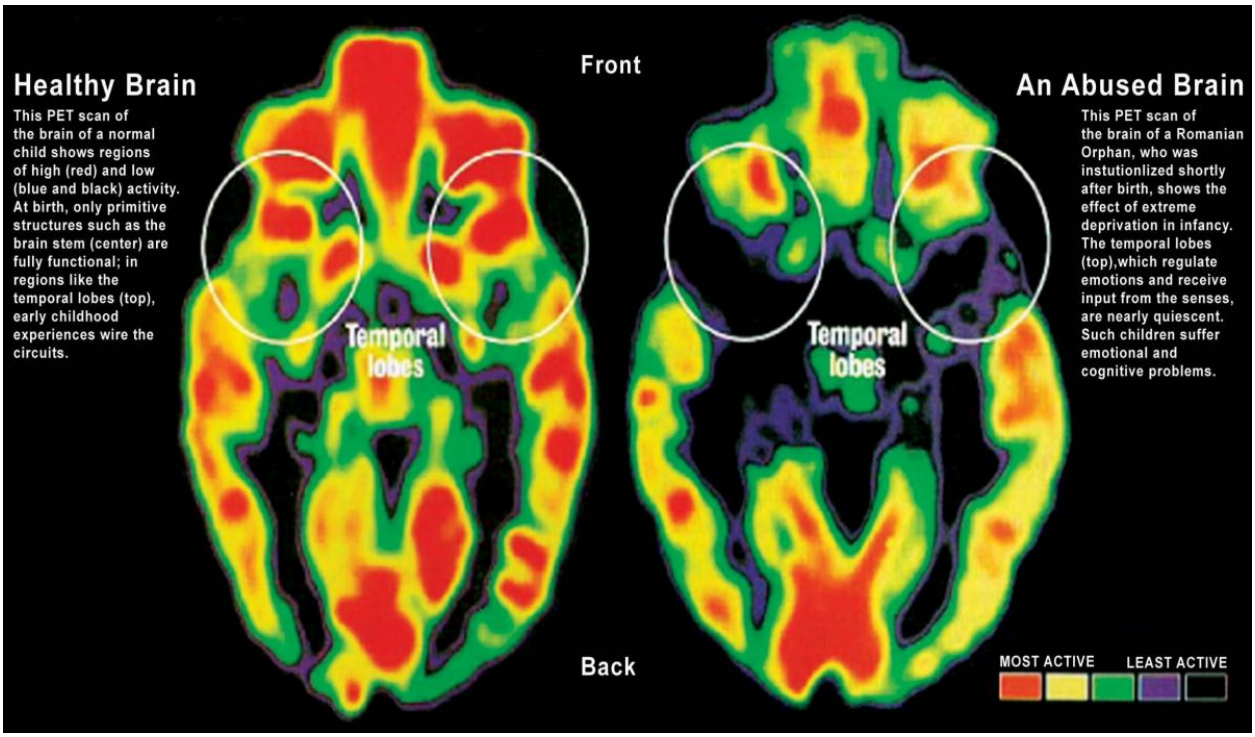
Real Life Heroes (RLH) (2012) (PDF)	6-12, plus adolescents (13-19) with delays in social, emotional or cognitive functioning; both males and females; for children who have experienced a wide range of traumas	individual, family, systems
Resilience and Coping Intervention for Children (RCI-Child) (2012) (PDF)	7-17; both males and females; for children experiencing ongoing neighborhood stressors such as violence and poverty, as well as conflict with teachers and peers	individual, group, systems
Safe Harbor Program (2007) (PDF)	6-21; both males and females; provided in schools for children and adolescents exposed to trauma and violence who may present with a range of problems and symptoms	individual, group, family, systems
Safety, Mentoring, Advocacy, Recovery, and Treatment (SMART) (2012) (PDF)	3-11; both males and females; to date the model has been effectively used with primarily African-American children; majority of families are low income	individual, family, systems
Sanctuary Model (2008) (PDF)	4-no upper limit; both males and females; evidence-supported template for system change based on the active creation and maintenance of a nonviolent, democratic, productive community to help people heal from trauma	systems
Sanctuary Model Plus (IRIS Project) (2005) (PDF)	Children and adolescents placed in residential treatment centers and their families	group, systems
Skills for Psychological Recovery (SPR) (2012) (PDF)	5-12; both males and females	individual, family

Skills Training in Affective and Interpersonal Regulation/Narrative Story-Telling (STAIR/NST) (2005) (PDF)	12-21; for females who have experienced sexual/physical abuse and a range of additional traumas, including community violence, domestic violence, and sexual assault	individuals, group
Southeast Asian Teen Village (2005) (PDF)	adolescents; females, Southeast Asian (mostly Hmong)	group
Streetwork Project (2007) (PDF)	13-23; both males and females; harm reduction program good with a wide variety of ethnic/racial groups, religious group, and the LGBTQ community	individuals, group, system
Strengthening Family Coping Resources (SFCR) (2008) (PDF)	0-no upper limit; both males and females; for families experiencing economic hardship	family
Structured Psychotherapy for Adolescents Responding to Chronic Stress (SPARCS)(2012) (PDF)	0-no upper limit; both males and females; for families experiencing economic hardship	family
Trauma Affect Regulation: Guidelines for Education and Therapy for Adolescents and Pre-Adolescents (TARGET-A) (2012) (PDF)	10-18+; both males and females; for children and caregivers experiencing traumatic stress; very frequently with single parents or with families whose children have limited contact with biological parents (e.g., foster kids, residential placements), and diversity of religious affiliations	individual, group, family, systems
Trauma and Grief Component Therapy for Adolescents (TGCT) (2008) (PDF)	12-20; both males and females; for trauma-exposed or traumatically bereaved older children and adolescents	individual, group, family, systems

Trauma-Focused Cognitive Behavioral Therapy (TF-CBT) (2012) (PDF)	3-21; both males and females; for children with post-traumatic stress disorder (PTSD) or other problems related to traumatic life experiences, and their parents or primary caregivers	individual, family
Trauma-Focused Coping in Schools (TFC) (AKA: Multimodality Trauma Treatment Trauma-Focused Coping MMTT) (2012) (PDF)	6-18; both males and females; for children exposed to single incident trauma and targets post-traumatic stress disorder (PTSD) and collateral symptoms of depression, anxiety, anger, and external locus of control	individual, group
Trauma-Informed Organizational Self-Assessment (2008) (PDF)	6-19; both males and females; for children who have experienced a wide range of traumas	individual, family, systems
Trauma Systems Therapy (TST) (2008) (PDF)	6-19; both males and females; for youth who have experienced a wide range of traumas	systems

Appendix B: Visual Images of the Brain

The images below demonstrate some of the effects of trauma on a child's developing brain. A brief explanation is also provided in order to clarify which brain areas have been affected by trauma, and what the physiological and psychological implications are for the child.



(U.S. Department of Health and Human Services, 2012)

Brain Structure	Difference Between Normal and Abused/Neglected	Impact
Temporal lobes	Reduced functioning in abused	Difficulty with language, auditory processing, and memory; possible increase in delusions, mood disorders

(Lezak, 2004)

Appendix C

NMT Assessment Graphs and Functional Brain Map: The NMT Metric

In the following pages, visual representations illustrate the case example's, James's, neurodevelopmental functioning. There are graphs depicting his developmental history score, and his developmental risk score. These scores are determined as information gathered about James's developmental challenges, from in utero to the present, is assessed. There are graphs exhibiting his current CNS functioning and his functional brain map. James received scores indicating his level of development in his brainstem, diencephalon/cerebellum, limbic system, cortex, and frontal cortex; scores may range from 1, indicating severe dysfunction, to a score of 12, indicating perfect development. James's relational health score is determined as well, based on his access to safe, healthy relationships. His developmental levels of sensory integration, self-regulation, relational, and cognitive functioning are reduced to values which are depicted on a graph, compared with the scores of a healthy peer (Perry & Dobson, 2013).

All scores are derived from clinicians' estimations of a child's functional levels; the estimations are entered into a matrix which in turn produces final scores for the child using an algorithm. (For further information on James's case, please refer to Chapter 2). These visual representations of a child's NMT assessment scores comprise the NMT Metric. The images in the following pages are reproduced with permission from the Child Trauma Academy.

APPENDIX 1

The ChildTrauma Academy
www.ChildTrauma.org

Neurosequential Model of Therapeutics : Clinical Practice Tools

A Brief Introduction:

The Neurosequential Model of Therapeutics (NMT) is an approach to clinical work that incorporates key principles of neurodevelopment into the clinical problem-solving process. The NMT Metrics are tools which provide a semi-structured assessment of important developmental experiences, good and bad, and a current "picture" of brain organization and functioning. From these tools estimates of relative brain-mediated strengths and weaknesses can be derived. This information can aid the clinician in the ongoing therapeutic process.

The results from the NMT Metrics should not be viewed as a stand-alone psychological, neuropsychological, psychiatric or psychoeducational evaluation. These reports are intended to supplement the clinical problem solving process and provide broad direction for the selection and sequencing of developmentally appropriate enrichment, therapeutic and educational activities.

Client Data

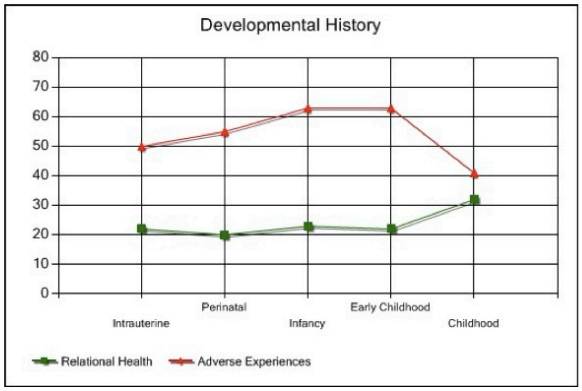
Client: James
Age: 9 years, 3 months
Gender: Male
Case ID: CTA_Example

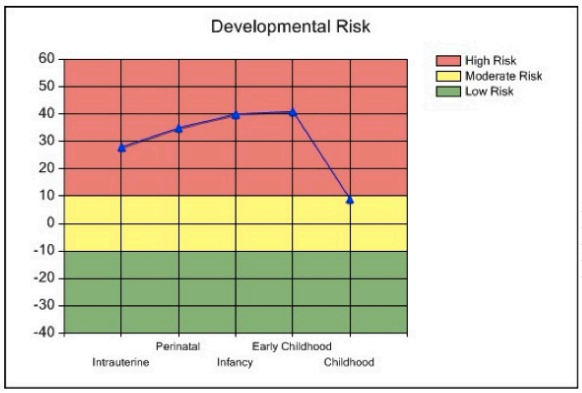
Report Data

Clinician: Bruce Perry
Report Date: 5/28/2012
Time: 1
Site: CTA

Developmental History

A brief introduction





Developmental History Values

	Adverse Events	Relational Health	Developmental Risk
Intrauterine	50	22	28
Perinatal	55	20	35
Infancy	63	23	40
Early Childhood	63	22	41
Childhood	41	32	9

Adverse Experience Confidence: Moderate
Relational Health Confidence: Moderate

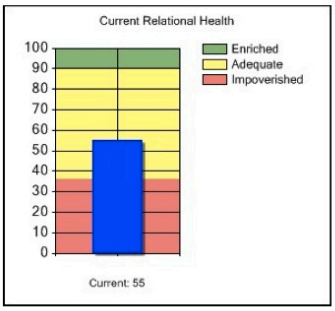
NMT childtrauma.org

The ChildTrauma Academy
www.ChildTrauma.org

Current CNS Functionality

	Brainstem	Client	Typical
1	Cardiovascular/ANS	8	12
2	Autonomic Regulation	6	12
3	Temperature regulation/Metabolism	9	12
4	Extraocular Eye Movements	9	12
5	Suck/Swallow/Gag	5	12
6	Attention/Tracking	3	11
	DE/Cerebellum		
7	Feeding/Appetite	7	11
8	Sleep	4	11
9	Fine Motor Skills	6	10
10	Coordination/Large Motor Functioning	6	9
11	Dissociative Continuum	4	10
12	Arousal Continuum	2	10
13	Neuroendocrine/Hypothalamic	8	10
14	Primary Sensory Integration	6	11
	Limbic		
15	Reward	4	11
16	Affect Regulation/Mood	4	10
17	Attunement/Empathy	4	10
18	Psychosexual	4	9
19	Relational/Attachment	4	9
20	Short-term memory/Learning	7	11
	Cortex		
21	Somato/Motorsensory Integration	5	10
22	Sense Time/Delay Gratification	3	8
23	Communication Expressive/Receptive	8	11
24	Self Awareness/Self Image	4	8
25	Speech/Articulation	8	10
26	Concrete Cognition	7	9
	Frontal Cortex		
27	Non-verbal Cognition	6	8
28	Modulate Reactivity/Impulsivity	2	8
29	Math/Symbolic Cognition	4	8
30	Reading/Verbal	4	8
31	Abstract/Reflective Cognition	3	8
32	Values/Beliefs/Morality	4	8
		Total 168	**317**

Current CNS Confidence Level: High



Current Relational Health Confidence Level: Moderate

Functional Brain Map(s) and Key

Client (9 years, 3 months) Report Date: 5/28/2012

3	4	6	2	4	4
8	8	5	3	4	7
4	4	4	4	4	7
	8	4	2	6	
	6	7	4	6	
		5	3		
		9	9		
		8	6		

Age Typical 8 to 10

8	8	8	8	8	8
10	11	10	8	8	9
9	10	11	10	9	11
	10	10	10	11	
	10	11	11	9	
		12	11		
		12	12		
		12	12		

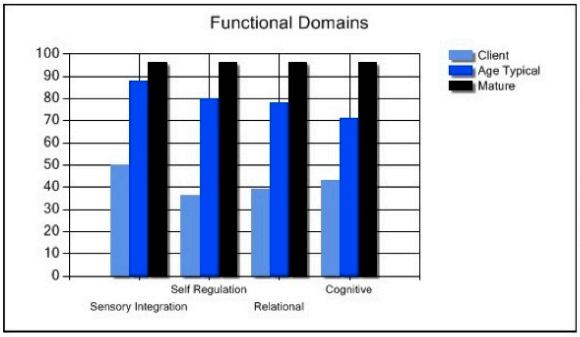
Functional Item Key

ABST (31)	MATH (29)	PERF (27)	MOD (28)	VERB (30)	VAL (32)
SPEECH (2	COMM (23)	SSI (21)	TIME (22)	SELF (24)	CCOG (26)
REL (19)	ATTU (17)	REW (15)	AFF (16)	SEX (18)	MEM (20)
	NE (13)	DISS (11)	ARS (12)	PSI (14)	
	FMS (9)	FEED (7)	SLP (8)	LMF (10)	
		SSG (5)	ATTN (6)		
		MET (3)	EEOM (4)		
		CV (1)	ANS (2)		

Functional Brain Map Value Key

DEVELOPMENTAL
Functional

12	DEVELOPED
11	TYPICAL RANGE
10	
9	EPISODIC/EMERGING
8	MILD Comprimise
7	
6	PRECURSOR CAPACITY
5	MODERATE Dysfunction
4	
3	UNDEVELOPED
2	SEVERE Dysfunction
1	



Functional Domains Values

	Client Age	Age Typical	Mature	% Age Typical
Sensory Integration	50	88	96	56.82
Self Regulation	36	80	96	45.00
Relational	39	78	96	50.00
Cognitive	43	71	96	60.56
Cortical Modulation Ratio	0.72	4.66	49	15.45

General Summary

Recommendations are based upon data provided by the clinician when completing the NMT online metrics. Based upon the data provided, cut off scores are used to indicate whether activities in each of the 4 areas are considered essential, therapeutic or enrichment. Activities selected for each category should be age appropriate, positive and provided in the context of nurturing, safe relationships.

Essential refers to those activities that are crucial to the child's future growth in this particular area. In order to fall into the essential category the child's score must be below 65% of the age typical score. It is our belief that unless functioning in the essential area is increased the child will lack the foundation for future growth and development in this and other areas.

Therapeutic refers to those activities aimed at building in strength and growth in the particular area. Scores that fall within 65 to 85 percent of those typical for the child's age are considered appropriate for more focused treatment. Therapeutic activities are viewed as important for the child's continued growth and improvement in the area.

Enrichment refers to activities that provide positive, valuable experiences that continue to build capacity in the given area. Children who fall into the enrichment category are at or above 85 percent of age typical functioning. Activities recommended in this category are designed to enhance and reinforce strengths previously built into the particular area of focus.

The information below is designed to provide the clinician with broad recommendations based upon the NMT approach. These recommendations should be used as guidelines for the treating clinician when considering particular therapeutic activities. Final treatment decisions must be based upon the clinical judgement of the treatment provider. The CTA cannot be held responsible for any of the treatment decisions made by the clinician based upon their own interpretation of NMT principles or recommendations.

Sensory Integration

Client Score: 50 Age Typical: 88 Percentage: 56.82

Essential: (below 65%) – Scores below 65% of age typical functioning indicate poorly organized somatosensory systems in the brain. The introduction of patterned, repetitive somatosensory activities weaved throughout the day have been shown to lead to positive improvements. These activities should be provided multiple times each day for approximately 7-8 minutes at a time for essential reorganization to occur. Examples of somatosensory activities include massage (pressure point, Reiki touch), music, movement (swimming, walking/running, jumping, swinging, rocking), yoga/breathing and animal assisted therapy that includes patterned, repetitive activities such as grooming.

Self Regulation

Client Score: 36 Age Typical: 80 Percentage: 45.00

Essential: (below 65%) – Scores below 65% of age typical functioning suggest the child has poor self-regulatory capabilities. These children may have stress-response systems that are poorly organized and hyper-reactive. They are likely impulsive, have difficulties transitioning from one activity to another, and may overreact to even minor stressors or challenges. Children in this category require structure and predictability provided consistently by safe, nurturing adults across settings. Examples of essential activities in this category include: developing transitioning activity (using a song, words or other cues to help prepare the child for the change in activity), patterned, repetitive proprioceptive OT activities such as isometric exercises (chair push-ups, bear hugs while child tries to pull the adults arms away, applying deep pressure), using weighted vests, blankets, ankle weights, various deep breathing techniques, building structure into bedtime rituals, music and movement activities, animal assisted therapy and EMDR.

Relational

Client Score: 39 Age Typical: 78 Percentage: 50.00

Essential: (below 65%) - Scores below 65% of age typical functioning suggest the child has poor relational functioning. Children who have a history of disrupted early caregiving, whose earliest experiences were characterized as chaotic, neglectful, and/or unpredictable often have difficulties forming and maintaining relationships. In order to make sufficient gains in relational functioning, essential activities must include interactions with multiple positive healthy adults who are invested in the child's life and in their treatment. Examples of essential relational activities include: art therapy, individual play therapy, Parent-Child Interaction Therapy (PCIT), dyadic parallel play with an adult, and when mastered, dyadic parallel play with a peer. Once dyadic relationships have been mastered supervised small group activities may be added. Other examples of essential activities include animal assisted therapy and targeted psychotherapy.

Cognitive

Client Score: 43 Age Typical: 71 Percentage: 60.56

Essential: (below 65%) - Scores below 65% of age typical functioning suggest the child has poor cognitive functioning. As in other areas of focus, essential cognitive activities must take place in the context of safe, nurturing relationships with invested adults. It is in the context of safe, relationally enriched environments that essential healing and growth can occur. Examples of essential cognitive activities include: speech and language therapy, insight oriented psychodynamic treatment, cognitive behavioral therapy, and family therapy.

Cortical Modulation refers to the capacity of important cortical networks to regulate and modulate the activity and reactivity of some of the lower neural systems. As the brain organizes and matures, this capacity increases and the Cortical Modulation Ratio (CMR) increases. The CMR reflects both cortical

"strength" and over-reactivity in lower neural systems involved in the stress response. Any Cortical Modulation Ratio below 1.0 suggests that the individual has minimal capacity to self-regulate. Ratios between 1.0 and 2.0 indicate emerging but episodic self-regulation capacity. This item can provide useful when determining the whether a client is "ready" to benefit from traditional cognitive interventions.

Appendix D

Permission to Reprint Copyrighted Images

On March 26, 2014, I was granted permission by Ms. Emily Perry, director of training and education at CTA, to reprint images of NMT assessment graphs. The following section includes the email from CTA.

March 26, 2014

Thank you, Catherine. This is most helpful. We are happy to grant permission for you to use these images - and also, if it's helpful, any of our descriptive material about the certification process and the NMT. I have attached our most recent article package for you.

We would love to hear about how your defense goes and any feedback you can give us as a result of your work.

Yours,

Emily Perry

Director of Education and Training

The Child Trauma Academy

Appendix E: Informed Consent Form

Project Title: Feasibility and Perceived Efficacy of the Neurosequential Model of Therapeutics

Project Investigator: Catherine Caplis
Doctoral Student
Department of Clinical Psychology
Antioch New England University
40 Avon Street, Keene, NH 03134

phone: 555-555-5555
email: xxxxx@xxxx

Thank you for volunteering to participate in this research project. I am asking for your help in understanding mental health professionals' experiences of working with NMT. I am conducting semi-structured interviews of 60-90 minutes during which I will ask you about your personal experience of using NMT in your clinical work. Your signature on this consent form demonstrates that you have been informed of the conditions, risks, and safeguards of this project.

1. **Your participation is voluntary.** You may withdraw from the study at any time, for any reason, without penalty.

2. **We do not anticipate any risk to therapists who choose to participate in this study.** During the course of the interview, I will ask questions concerning your personal experience of using NMT in your clinical work. It may be that speaking about your clinical work with traumatized children may cause you some discomfort. If that were to happen, please inform me, and I will seek to alleviate your discomfort, and/or refer you for mental health assistance.

3. **I will protect your privacy**. No record of this project, or report of the results, will connect any identifying information to your interview responses. I will audiorecord the interview so that I can later transcribe it. The recordings will then be erased, and the typed transcript of the interview will be identified by a code number rather than your name. Your interview will be coded according to salient themes that emerge over the course of all of the interviews. I may use quotes from your interview in a final report, but I will take care not to include any

comments that would identify you. The results of this research study will be read by my professors at Antioch University, and by some members of the center.

4. By participating in this research study you are eligible for the chance to win a $25 Amazon gift card. You remain eligible for the drawing even if you choose not to complete the interview.

5. The intended benefit of this research is to help therapists who utilize NMT, or wish to use NMT, to understand other therapists' perceptions of NMT's effectiveness, feasibility, advantages, and disadvantages. Currently, there is a lack of research on NMT, and this research project will provide therapists with increased knowledge of NMT. In addition, your administrators will gain information into how their therapists utilize and perceive NMT, and how the agency as a whole has implemented NMT.

6. If you have any questions about the study, you may contact Catherine Caplis at 555-555-5555, or via email at xxxxx@xxxx If you have any questions about your rights as a research participant, you may contact Dr. Katherine Clarke, Chair of Antioch University New England IRB, at 603-283-2162, or Stephen Neun, Vice President for Academic Affairs, at 603-283-2150.

I have read the information provided and I agree to participate in this research study on mental health professionals' experiences of working with the Neurosequential Model of Therapeutics.

_____ _____

Signature Date

Please print name: _____

Appendix F
Possible Interview Questions

The interviews will last approximately 60-90 minutes and will consist of most of the following questions. These interviews are semi-structured. If necessary, some questions may be expanded upon or eliminated, depending on the idiographic needs of the interviewee.

1. Please tell me about your roles and responsibilities at the center.
2. How do you use the Neurosequential Model of Therapeutics (NMT) in your clinical work?
3. What do you think of NMT?
4. Would you say that most therapists at this center are integrating ARC and NMT, or are they using predominantly one or the other?
5. Have you switched from using ARC to using NMT? If so, how has it been for you?
6. If you are using both ARC and NMT, how has that been for you?
7. If you use both methods, are you able to determine if one is more effective? In what way?
8. Please describe the advantages to using NMT and its strengths.
9. Please describe the disadvantages to using NMT and its weaknesses.
10. Please describe the effects of NMT on your clients.
11. Do you notice any difference in your clients' outcomes since using NMT? If so, please describe them.
12. Do you rely on clinical judgment alone, or is there some concrete evidence for your conclusions?
13. Do you use outcome measures?
14. How do you measure clients' rates of progress?
15. Why do you think there has been so little research on NMT?

Appendix G: List of Superordinate and Emergent Themes

1. **Superordinate theme: Using NMT**

   Emergent themes: NMT as a framework
   NMT as an evaluation and consultation tool

2. **Superordinate theme: Integrating NMT**

   Emergent themes: ARC, NMT, and DBT
   Family systems
   Integration into daily activities

3. **Superordinate theme: Positive Effects of NMT**

   Emergent themes: Decrease in problematic behaviors
   Increase in empathy, decrease in negative judgment
   Empowerment and validation

4. **Superordinate theme: Positive Aspects of NMT**

   Emergent themes: Increased credibility, accessibility, relevance, and hope
   Parent-friendly model
   Increased validation for staff, clients, and clients' families
   Increase in intervention specificity and/or frequency
   Praise for NMT

5. Superordinate theme: Disadvantages of NMT/Barriers to Implementation of NMT

   Emergent themes: No disadvantage
   Cost
   Systemic issues
   Lengthy, difficult training
   Difficulty adopting NMT
   Elitist model
   Importance of context
   Remaining within the limits

6. **Superordinate theme: Dr. Perry**

Emergent themes: Charisma and intelligence
Teacher and mentor
Dr. Perry's work
Open about limits of NMT
Dr. Perry as a political figure

7. **Superordinate theme: The Metric**

Emergent themes: Used to frame and conceptualize cases
Reactions to the Metric
Mixed reactions
Using the Metric
Difficulty using the Metric
Progress using the Metric
Not using the Metric enough
Using the Metric to generate funds
Not using the Metric at all

8. **Superordinate theme: Measuring Progress**

Emergent themes: Using the Metric to track progress
Quantitative measures
Case review
Parents' feedback

9. **Superordinate theme: Research on NMT**

Emergent themes: Politics
Multiple reasons
New and qualitative approach
Tailored approach, supported by clinicians

10. **Superordinate theme: Training in NMT**

    Emergent themes: Providing trainings
    Receiving training in NMT
    Effects of training
    Validation through training
    Not receiving enough training

11. **Superordinate theme: Relationships and NMT**

    Emergent themes: Healing in relationships
    The overlooked relational piece of NMT
    Lack of good attachment

12. **Superordinate theme: Learning to Use NMT**

    Emergent themes: Difficult to learn
    Ultimately positive
    Validation

13. **Superordinate theme: Tailoring NMT to the Child**

    Emergent themes: Trial and error
    Possible treatment options

14. **Superordinate theme: Collaborators**

    Emergent themes: Other practitioners
    Client's family
    Partnerships
    Schools
    Wanting to increase collaboration

Appendix H: Superordinate and Emergent Themes supported by participants' comments

Superordinate and Emergent Themes Relevant to NMT

Superordinate Themes (number of participants)	*Emergent Themes (number of participants)*	*Examples*
1. Using NMT (N = 7)	NMT as a framework (N = 5)	"So we talk about it [NMT] as a framework, and then we apply it... I see it as just as an overall framework for healthy development." (Participant 1)
		"It [NMT] has affected my work in the therapy office in the way I view kids who have been impacted by trauma change... it changes the way I understand talk in the session as well, versus touch and other ways of reaching children, and it's also changed the ways that I make referrals outside of the session..." (Participant 4)
		"...[It is] the way I see the world now. It is amazing... I think that's more hopeful... To be in charge, you can be in charge of your own regulation. I think we are giving that message differently... That's definitely a shift..." (Participant 5)
		"It's [NMT] definitely helped us look at things... I think it's changed our lens, which has allowed us to approach situations differently. I think it has helped us understand if you have a kid that's functioning really highly intellectually but emotionally might not be on par, it helps us understand that as well, how that discrepancy can be present." (Participant 6)

	"It [NMT] helps with the understanding of the process and consequences of trauma." (Participant 7)
NMT as evaluation and consultation tool (N = 3)	"We do therapy in house, and then we do a lot of consultation and evaluation work outside of here, with schools, and with DCF. So, primarily we are being asked by other agencies to evaluate and consult on kids that have developmental trauma. So NMT is part of the workup that we do." (Participant 2)
	"[What] I do is psychological evaluations and consultations and that's probably the most direct way in which I am using NMT. These are very complex situations where sometimes there is a differential diagnosis between autism spectrum and developmental trauma, or when it's clear that there's developmental trauma there might be a question of kind of trying to clarify diagnoses. ... so they are your classic NMT developmental trauma kids, and so it's been a perfect place to think about NMT." (Participant 3)
	"Not only am I practicing here and doing therapeutic work with kids on a day-to-day basis, but I am also out in the community doing lots of different trauma-based evaluations. In the best of all scenarios, NMT will help our DCF system understand the need for permanency for kids, that there are certain situations that linger too long and too many chances are given, and kids' brains and bodies are hurt in the process continuously... Hopefully this model will help us to understand the urgency of getting

		these kids early intervention and early permanency." (Participant 4)
2. Integration of NMT (N = 7)	ARC, NMT, DBT (N = 4)	"It does not represent the entirety of the work that we do. We use the ARC model, DBT, family systems work, social principles... In the paperwork it says very clearly that it is not meant to be used as a stand-alone evaluation." (Participant 2) "I think the excitement about ARC and NMT rushed the center at the same time, and folks went in one direction to train and some folks went in another. I happened to cross both lines; I trained in both. I think it [NMT] is accessible and it's compatible with other formats that are being taught up there, for example, ARC. I think it's very compatible with ARC... I look at NMT as an assessment tool. I look at ARC as an intervention tool... I am understanding where the child is at through the use of NMT, and I am understanding how to focus my ARC intervention based on what I find out from the NMT method." (Participant 4) "One is just having a developmental trauma lens, and that's where all those things, those models, ARC, NMT, blend really well together. And then we can get more specific using NMT." (Participant 5) "We integrated a lot of different things, so it sort of all comes in together and it's all very similar... I think we've gained a better understanding of integrating aspects of DBT and ARC and NMT." (Participant 6)

	Family systems (N = 2)	"Family systems informs our understandings those also sync up, in my experience, with NMT. In our family therapy, oftentimes, we are educating parents and kids about neurodevelopment and developmentally respectful ways of thinking and developmentally appropriate expectations and interventions." (Participant 1) "There is just a seamless connection [between NMT and the teaching family model]." (Participant 3)
	Concrete integration into daily activities (N = 2)	"In the inpatient [unit], I think that we've integrated it [NMT] beautifully. It's pretty consistent, they [the clients] know what's expected of them, so, we, like, dance around with the kids, we do drumming, and we do traditional processing stuff with them. So we do stabilizing but that also pairs with the concept of flexibility. Like, use your mind and body." (Participant 7) "And it [NMT] actually comes in the day-to-day life with the kids- different activities we do... We have some stuff down in the piano room that either kids can use one-on-one or on the trampoline, some things you can play with your hands. So it's always here, it's integrated into everything." (Participant 6)
3. Positive Effects (N = 7)	Decrease in problematic behaviors (N = 3)	"We've maybe called the police once or twice in the last year. When the kids start to dysregulate instead of sitting down and doing talking, processing in writing, they go to the gym. And so there is a lot less talking and more movement... So the number of explosions since

	we've done NMT is much less, it feels much calmer." (Participant 1)
	"Kids are enjoying it [NMT]; they're starting to regulate and feel calm... Kids who would in the past, I think, go to more crisis-based, acting-out type of thing-" (Participant 6) "Come seek you out instead." (Interviewer) "Yeah, and it's only been positive in our experience here... So there have been many fewer behavioral incidents... It's been more than six years since I've restrained somebody... So I guess the core of the crisis response is the same, but I think the understanding of what led to it is different, and so that leads us to be more open in how we process it and how we help them process it... I think the understanding comes from just the learning of the brain development, the trauma-informed treatment." (Participant 6)
	"It [NMT] helps those kids who are struggling with dysregulation, you know, those kids who have that fight-or-flight impulse, whose parents are trying to have them not steal from grocery stores, or punch holes in the wall." (Participant 7)
Increase in empathy, decrease in negative judgment (N = 5)	"I think it offers an incredible framework of compassion... I think they [the clients] are compassionate with themselves. I think that they experience new levels of competency... they are compassionate with themselves because they understand themselves and each other, who they live with, at a different level." (Participant 1)

	"When you look at the brain and the function, it helps reframe what might be pejoratively referred to as, that kid is a jerk, or aggressive, and you can convert it into internal states. If you reframe defiance as fear, you hear that very differently." (Participant 2)
	"So it's a much less critical judgmental stance... the perspective has changed and so there is less shame." (Participant 3)
	"I've been able to increase the empathy for these kids in ways that I never could in the other ways that I was teaching or doing psychological reports, for whatever reason. I'll come in and I'll have these teams, these providers at a school, for example, be angry at a kid and thinking all the negative things that you hear about a kid, they're manipulative, controlling, and in the course of 45 minutes, it becomes, 'oh, she doesn't have the skill set, she just hasn't gotten there yet, this is impacted by her history, oh, this is a brain thing' and I have influence over changing the way that she associates, the way that she perceives the world, so I can feel more confident and I can have more empathy." (Participant 4)
	"It's kind of non-judgmental in a weird way." (Participant 5)
Empowerment and validation (N = 2)	"I think they [clients] tend toward being more empowered. I think as they find it within their capacity to self-regulate, to experience emotions, to tolerate relationships, they feel pride..." (Participant 1)

		"So NMT has been empowering for you as well." (Interviewer) "Yeah, absolutely, yeah... Nothing prior to this has worked." (Participant 3)
4. Positive Aspects of NMT (N = 7)	Increased credibility, accessibility, relevance, hope (N = 4)	"I think it [NMT] has the kind of cache of science and of feeling like something that people will believe in. I'm not sure that- I would caution us to think that it is more hard science than social science at this point, but it is informed by the kinds of things that people feel like they can rest more assuredly in." (Participant 1)
		"Its credibility– it's understandable, it's accessible, and it's hopeful. Yeah, I think the upside in bringing the brain in, I think it has broadened and deepened the understanding of human behavior." (Participant 2)
		"Since I've been working with NMT I feel like I am aware of leaving them [families] with a conceptualization that has been more relevant to them... And there's enormous hope...for the first time for the first time it feels like we are actually getting somewhere." (Participant 3)
		"I don't know, it just feels like it's [NMT] added science into the clinical world in a way that, the brain is an exciting organ, I think, as soon as you start talking about it, people get excited." (Participant 4)
	Parent-friendly model (N = 3)	"When I've sat with birth parents, because it [NMT] feels and is more objective, that it takes blame away. Birth parents have a sense of relief, that, yeah, I am responsible for some

	of the circumstances, but this happened to me, too." (Participant 2) "It's [NMT] really clicked with parents... that their child not only comes to them with a set of behaviors but comes to them with a set of physiological associations, and... they are a key component in changing those physiological associations. So it changes the way that I educate parents, and the way that I talk to them about their role with their child, and the way that I teach them to intervene with their child in a much more non-talk way." (Participant 4) "Yeah, I think it's a very parent-friendly model. I've even worked with some biological parents who have maltreated their children, and they have still thought this was a really good model. At first it was like, wow, you gave me all this information and now I am going to sit down with you and tell you that your kid is acting this way because you neglected them. And parents have been surprisingly receptive." (Participant 5)
Increased validation for staff and clients (N = 3)	"It has helped us feel valid about what is often so much of a residential counselor's job with kids, which is playing with them... [NMT] helps us to recognize the importance of extra curricular activities. [NMT validates] our ability to justify the funds needed... because you've got kids on climbing teams, and track teams, and aikido, and guitar lessons, and it used to be that that was seen by a lot of people as this kind of extra stuff... [NMT] helped us again

	justify really taking care of our staff... because we need this, in order to do this. So I think it's become a healthy environment. I think staff come here and we are healthier because of the intentional way that we are." (Participant 1)
	"It [NMT] validates why things are so hard. And I have been able to watch some parents advocate for their children in a different way- in a more effective way, in terms of being very clear about why they needed specific services, and not backing down, and needing funding for it." (Participant 3)
	"So, I think that understanding that there's a kind of dysfunction... I think that we do that in a way that simplifies and validates all that for the parents. So, okay, does the child have these things in his brain? It's not his fault, it's not their fault." (Participant 7)
Increase in intervention specificity/frequency (N = 1)	"I think the advantages [of NMT] are to really localize the impact so that you are not placing your intervention, for example, you are not speaking to a brain that is still needing sensory input. It's about really understanding how not to skip developmental steps and helping a child prepare. To make it super-simplistic, it's a way of understanding a child's brain impacted by trauma, even if it's only a symbolic representation to help us localize, to help us make decisions about interventions that are relevant to the child.... they're also at some point throughout their week participating in adjunct body-based modalities outside of here. And that

	could include anything from incorporating the sensory room at school through the day to horseback riding, animal therapies, movement therapies, drumming, massage - which is a huge recommendation I've been making recently. So it feels like kids get double-dosing, triple or quadruple dosing throughout the week, and it's enhanced the pace of change and helped parents, I think." (Participant 4)
Praise for NMT (N = 6)	"It's [NMT] reinvigorated my sense of working here. Yeah, I feel really really proud of the work that my staff do with the kids. And I think that the NMT model and practices have really helped us.... I think it's rooted in a strengths-based orientation. At its core, around the idea that there is always the opportunity for change even for aspects of our brain structure and autonomic functioning level that make it very hard to change, but we used to think they weren't changeable... The experiences, though they need to be very intentional, they are within reach for day-to-day life. If you are creative in your way of thinking and applying it. It allows, when offered correctly, I think it allows room for all self-determination... I think what they've done a great job with is spelling out the framework, helping people come to an understanding of development, how that can go awry, how we can hope to intervene." (Participant 1)
	"So we have [been] reasonably successful because it [NMT] is so concrete. I think people are so frustrated with the standard recommendations of therapy... As

we keep saying to Bruce, we're on fire. And that was not planned for, how much on fire we are. It just is - the right place at the right time. You know we want to be good stewards of the model." (Participant 2)

"I don't think it's [NMT] going away. It's too good. I am not thinking that this is a passing phase. Unfortunately, the kids who are impacted by developmental trauma are not a passing phase. And this works for them. Nothing prior to this has worked... So it hasn't changed my understanding of the impact of trauma; to me it's just added these layers of sophistication to the way that I teach things and it feels like it's a particular competency enhancer that we didn't have before." (Participant 3)

"Yes, it has advanced my work. I have not changed how I practice per se, but it has enhanced how I practice with the materials." (Participant 4)

"I think the other big reason is because it makes sense for these kids. We just really don't know what to do, we haven't known what to do, it is so complicated. It is a model that allows for all the complexity... We are super-enthusiastic about it.... It really does feel like in the last five years, it feels like, even though we have been doing this work for many many years- we know what we're doing now." (Participant 5)

"So it makes things make more sense a lot of the times... So I think it's been super successful... I think we've gotten better outcomes just

		with daily life and kids feeling safe and secure." (Participant 6)
5. Disadvantages of NMT/ Barriers to Implementation (N = 7)	No disadvantage (N = 3)	"I can't think of anything negative." (Participant 3)
		"Disadvantages... no. No, I think particularly because that is who we serve here. So, no, I don't really see any disadvantages." (Participant 5)
		"I can't think of times when we've been, 'Oh, this just isn't working'..." (Participant 6)
	Cost (N = 3)	"The main barrier here is cost...to do it right... That's typically a two to three-hour workup, so, given that we are oriented toward family therapy, when we are working with kids that have developmental trauma, there isn't often funding streams for two or three hours of evaluation." (Participant 2)
		"I think some of the drawbacks of NMT would be that the, um, insurance and just the general, um, system haven't caught up funding-wise with the concept... I think if people really look at - if you wanna just look at the cost, this is not cheap. But it seems to me that it's either slightly cheaper or equal to what residential costs." (Participant 3)
		"It depends on the willingness of the parent to work without resources, and within the school. A lot of it is with the school... ...and there are things they [parents] can do, like take walks, or massage, that don't cost money..." (Participant 4)

Systemic issues (N = 2)	"And then more systems [need to] change, to have the resources to continue that. So we can do it here, but the rest of the world isn't necessarily built to do it, so that's frustrating. I think there's still a lot of situations that we can't impact. Either because we don't have the resources, or just because... (pause)... you know some kids are, like, so much crap has happened to them. And that's hard... It's very hard" (Participant 5)
	"The system is awful, it just is. Like we are observing a child in school and who is paying for that? And it is such a struggle with insurance companies and all that. The limitations are real. And there is only so much you can do regardless of what approach you use, what framework you use... The system has issues. People, I think, are so focused on a reactive way of approaching and not a collective understanding response... You have to wait for shit to really fall apart before you can do a, b, c, and d. Only if you are in custody can you do this. Like a lot of services that the center provides you can't access with insurance... It's just bananas, I don't know... it's just stupid." (Participant 7)
Lengthy, difficult NMT training (N = 1)	"I just don't think there are that many agencies and clinicians who can put in four or five years to learn it. And then themselves train others on it. So that remains to be seen." (Participant 1)
Difficulty adopting NMT (N = 1)	"I think some of their growth edge has been the advice around implementation of that [NMT]... I

	don't know that it is a problem with the model per se but I think that's really where the rubber hits the road- helping people adopt it. Let go of other ways of thinking, let go of the habits that they have, and even when they do, figure out how it can be part of a kid's life in a way that feels natural." (Participant 1)
Elitist model (N = 1)	"I wonder whether it seems like an elitist model because they have been pretty protective over who can train, who can use it. I completely understand why; they're trying to create something and they want it to be as contained as possible and controlled as possible. But I think some folks have felt like it's not been accessible to them." (Participant 4)
Importance of context (N = 1)	"I think it's still left to the local team to translate that [NMT] into this kid's life, this family's life. And it's left then, and there can be errors in translation and the actual implementation of it. I think we have the luxury here of complete control over our environment... I think it would be much harder for me to do these kinds of things if I had a kid in my home who would need this. And we run into that problem in the family therapy side of things." (Participant 1)
Remaining within limits (N = 2)	"In the beginning of 2012, we tried to take kids that were harder, because we thought we'd learned so much from NMT... it didn't work, it was a disaster, actually. Nobody got hurt, the kids were all very well cared for. But the staff (laughs) ..." (Participant 3)

		"I think as long as we apply it to the right people in the right way and we're not– we're not neuroscientists – and I'd say that's probably the one thing we've had to stay really clear on. So just helping people to know that this is not an fMRI. Yeah, we weren't always there... Especially in the beginning like thinking we had to know everything about the brain and the neurotransmitters... I mean, there's just no way...." (Participant 5)
6. Dr. Perry (N = 6)	Charisma and intelligence (N = 6)	"At that time there was an initial burst of excitement for the agency. Bruce is a really charismatic, intelligent presenter. And I think everyone was really excited about a comprehensive framework that integrated views that used to feel so disparate." (Participant 1) "There is something very compelling about Bruce... He [Bruce Perry] is brilliant at articulating it [neurobiology]." (Participant 2) "And you know Bruce Perry, we've met him several times and he's a quality guy. And he's very smart, ethical, and his feet are on the ground... you know his heart and brain are in the right place." (Participant 3) "He's a mover and a shaker, no question about it. He's also very comfortable to be around, that makes a difference, too. And he's really charismatic and I think he just has this way of getting people motivated." (Participant 4)

	"Well, Bruce is very helpful (laughs). I mean we've had him here twice. The last time there was almost 700 people. Yeah, which in this state is a lot of people. Um, and he's a great presenter, and smart, and he knows how to deliver the message to people. And you know he got us jazzed. And he's gotten other people jazzed. So you know you can't discount that." (Participant 5)
	"So I keep referring back to Bruce... He's great. He's really good. We were lucky enough to spend a lot of time with him. He's like, don't over-complicate this." (Participant 7)
A mentor and teacher (N = 2)	"But he is a mix because he is a real person. He is not just an incredible writer and researcher, but he is a great teacher. He is a mentor." (Participant 2)
	"You know it's really important to have mentors in this work. I've certainly had very different ones at different times and you know, Dr. Perry's kind of (laughs)… he's a jock-y, swearing, just kind of like odd... Um... but he's fun. And he's smart and really applies what he knows to learning... Which not many people have that skill. It's very rare... Like he knows how brains work and so he trains to the way brains work. Which is pretty amazing." (Participant 5)
Dr. Perry's work (N =3)	"When I read *The Boy Who Was Raised as a Dog*, I thought, this is not new to me but there was a way of articulating it, preventing it [trauma]..." (Participant 3)

		"Actually, Bruce has a really good talk. It's a talk he did in California, some big statewide initiative, and I think it's Relational Poverty in the Modern World." (Participant 5)
		"I think also there are a bunch of slides that we use from Bruce Perry, and one of them is on the arousal continuum, and we show that piece a lot." (Participant 2)
	Open about limits of NMT (N = 1)	"Bruce talks a lot about the limitations and has been really open about, it works really great here, and not as great here." (Participant 7)
	Dr. Perry as political figure (N = 1)	"I think Bruce has been a political figure, too, and for that reason, he's been in his own pocket. But I think recently he's expanded. So, I don't know, I think it'll be interesting to see how it goes." (Participant 4)
7. The Metric	Used to frame/conceptualize cases (N = 6) (N = 2)	"So it is often more a framework in my thinking." (Participant 1)
		"So what has happened over the last five years is that, with NMT, my ability to take information that people are giving me and do something with it that is both coming up with that Brain Map [the Metric], and coming up with a conceptualization for people, where I can help them understand early trauma has affected how the brain has developed." (Participant 3)
	Positive reactions to the Metric (N = 3)	"You show them a Brain Map of their child. There is a credibility, and for me and I think for a lot of people, there is a visual component of it that is so visually pleasing, that it is like, oh, wow, we nailed this, we

	have this color-coded thing that is just a snap shot of functional ability and there is something very hopeful about that." (Participant 2)
	"And kind of then just take that pile of data and push it out of the way and have this [the Metric], and it means something to them, and it's powerful, and the thing that is most important is that it is helpful... There is something about that formulation, that picture- something about the way that we can explain the brain development with that tool. It's more user-friendly. People can get it. It doesn't matter your level of education or background. It makes sense to them. The parents that we met with for evaluations and given brain mapping have given really positive feedback and the themes that we have heard from people have been that they definitely feel like they've understood the impact of the trauma in a way that has made sense." (Participant 3)
	"And people do, like, people will call up and say, I want a brain map. And, um... we say a brain mapping is part of a trauma eval- but you know that's the kind of sexy part of it. ... that's part of why it's great, it's a great visual tool." (Participant 5)
Mixed reaction to the Metric (N = 1)	"I usually feel it out in the beginning, and with some families they appreciate it and we're able to touch on it once in a while in sessions. For some families, they love it, and it helps them right away to depersonalize their own experiences and to organize their way of thinking and their way of interacting. And then some families are very

	suspicious of it, see it as one more tool used by the expert others to analyze them...” (Participant 1)
Using the Metric (N = 1)	“In my therapy, I would say I probably use it at this point with 75 percent of my clients... I would say [I use the Metric] in probably at least 60 to 75 percent of my psychological evaluations... it’s changed my evaluations exponentially because I feel that I have this beautiful measure with the Metric to show a family’s progress and to show the areas of impact. And I am very clear to say that it’s one piece of information, that it is not by any means a brain imaging... For some reason, this Metric and the way that we’ve described it, has allowed it to sort of be couched in scientific information so that they can put that child with developmental trauma disorder on par with the child with diabetes” (Participant 4)
Difficulty using the Metric (N = 3)	“It’s a moving target, yeah. I think that has probably been the most challenging. In terms of the model, at the level of the Metric, I think it feels like CTA [Child Trauma Academy] is really fine-tuning the fidelity side of it. [Other participants] and I have been working for five years using the Metric. And we have only recently participated in a fidelity exercise where our use of the Metric matched up at the acceptable to high levels that the CTA has as a bench-mark. So in that regard it is a really clinically sophisticated tool to use. And I think the downside to that is that it can be very easily misused, unintentionally misused. And that level of training may not be realistic

	in terms of a sustaining model." (Participant 1)
	"You know, it's been a rigorous process– how to score the Metric in accurate ways. And we have toiled with this, and it's one of those things, we've felt like we've gone back to grad school to just learn how to understand it, how to administer, how to interpret." (Participant 4)
	"Yeah, it's hard to learn how to do the scoring." (Participant 6)
Progress (N = 1)	"But I think that the more we've done it, the more comfortable we've felt– or at least for me personally–and we've done these fidelity exercises with Bruce and it's been incredibly stressful, but we've come out in a good place at this point in terms of our fidelity compared to his. So that feels good. As with anything, the more practice, the more competent the skills." (Participant 4)
Not using the Metric enough (N = 4)	"We're just not integrating that [the Metric] as well internally, yet, as we do externally. So as we get better at creating infrastructure around this, my sense is that internally we are going to be doing more and more with the Metric, with clients, in the clinic, and even in therapy." (Participant 2)
	"I don't think we have tapped the possibilities of using NMT as an incoming assessment tool in our community-based services program, as a mid-line tool, and as a discharge tool. I think it could be. I think we have far to go in figuring out how to use the tool in our community-based programs. We have not trained other

	people yet to use the Metric. We're training other people to understand the findings." (Participant 4)
	"So, I think we're just figuring that out. So right now, it's [use of the Metric] kind of based on– we have this DCF contract-–so if a DCF worker asks then we can reserve someone's time to do that. Um, we're just starting to figure out how we can do more Metrics internally for kids that we're serving in our programs, whether they are in DCF custody or not. Right now, I would like to say and I hope we will get to a place where we use the Metric for everyone that we serve at the center. And I think we're working towards that, it's just a resource issue." (Participant 5)
	"As an agency we have the five clinicians who I mentioned who have access to do the Metric. They have approval from CTA to do the Metric. The folks at the center are doing the Metric on a consultative basis. And so sometimes there are kids at the center whose teams have access to the funding, and want that [use of NMT Metric]. But it is not built in. And I think they do mapping for some of the kids that they see as family therapists. But as an agency that is some of the logistical part that we are having to figure out." (Participant 1)
Using the Metric to generate funds (N = 2)	"...[staff need] to think creatively around how we can generate income-from using the Metric." (Participant 2)
	"And then to also have that as a service– as a source of income

		generation, you know, for people outside the agency. We'd like to do that." (Participant 5)
	Not using the Metric at all (N = 1)	"The staff like myself don't... it's not a part of our regular work with the kids." (Participant 6)
8. Measuring progress (N = 7)	Using the Metric (N = 3)	"And I think what [participant number one] has seen, doing these Brain Maps at six month intervals, you can see the change. And you see change. And you see change. It is cool. It feels a little bit more provable." (Participant 2)
		"I have [used the Metric to measure progress]. With some of my more long-standing clients, I've done it every, I try to do it, I'd say, once a year." (Participant 4)
		"We can actually do a time series [with the Metric]. And yeah, we can show that it looks different. And um... we have some visual [information] and some numbers..." (Participant 5)
	Quantitative measures (N = 6)	"A Vineland. I think that's a really nice compliment to the NMT Metric... As an agency we do Child Behavior Checklists, but to me those are much more a snapshot in time. So we've had kids where their Metric has looked incredible after six months. But so much of that is the collective environment." (Participant 1)
		"...[I use] depression inventories, or trauma symptom checklists, some of those... I supervise a lot of cases, I have seen changes there. I have seen

changes with the kids that I work with when the parents have the resources to really [be] collateral... My experience is yes [positive changes over time in children when using NMT]." (Participant 2)

"We do a CBCL on kids every six months and we do Vinelands at the beginning and the end. And the change in their adaptive function has been remarkable."
(Participant 3)

"We're using cognitive testing, we're using measures of psychological and emotional issues, the Achenbach, the trauma symptoms checklist, the parent-stress index. We're using the MMPI, and then we're using executive measures, the Brown, the Brief, and sometimes I use the Adult Attachment Inventory for parents. So we're using a full battery of measures... And I know that [participant number three] and I are the ones who are primarily using the full battery; [participant number two] is using less of the measures just because his orientation is social work and ours is psychology. But to me, again, it's just one measure that enhances the data that I'm presenting to teams... Yeah [I've noticed] a pretty remarkable change [in clients]."
(Participant 4)

"We'll do the CDCL, the child self-regulation checklist... We do the CBCL and I don't know where they go once they get scored."
(Participant 6)

"It's hard when I'm in a kid's life for like seven days... Everyone has

		Achenbachs, but I think that it's a measure that is overused and is not overly helpful. And I think it is an inappropriate measure to use at that time [in the crisis unit]. It's really hard, other than just knowing the kids we have. I don't really have a scientific way of measuring stuff other than, are they alive?" (Participant 7)
	Case review (N = 1)	"We've been developing a system for figuring outcomes, but it is so challenging because there are so many different aspects to measure. So we haven't helped on the research front... We do case reviews every other week. And it'll be how they're [the clients] doing or sometimes we'll bring in more theoretical stuff or planning." (Participant 6)
	Parents' feedback (N = 1)	"I still believe what the parents tell me. If they say the kid is better, the kid is better. Can't say how provable that is." (Participant 2)
9. Research on NMT (N = 7)	Politics (N = 5)	"Within the academic world, my experience of it is that people have their camps, and they are invested in their models, and there is a lot of prestige and ego and power and politics and money involved in all of that. And so how that has played into whether people have wanted to do research or not into NMT, I don't know... I think it is [would be] a paradigm shift on some level." (Participant 1)
		"To me it is more of a marketing thing. Outside of an insane asylum, we don't really know if what we are doing works. So we are in the

	national trend of evidence-based, outcome-oriented practice, so we will see more and more of that happening. So it may not be NMT that demonstrates that, but we might have some other measures, reduction of anxiety... So I think that is what worries us... though he [Bruce Perry] has been using well-established principles." (Participant 2)
	"I also think there's some interesting dynamics among the top performers in this field and I think, well, I'll just leave it at that. I think there's been some real territorial qualities to this. So I have a feeling that if his [Bruce Perry's] momentum continues and he continues to be as influential in these bigger pockets of the world where the scientists fit, then he will likely get people to study it more And this is not hard data. It's not soft science, either, but it's not hard data." (Participant 4)
	"Yeah, I don't know, I think it's politics... I mean, right, you have this old-school wave of thinking and you got to wait for some dinosaurs to die off." (Participant 7)
Multiple reasons (N = 1)	"Well, why can't we get developmental trauma into the DSM 5? I mean, I think you know that is the answer. People want simple answers. And, um, developmental trauma is not a simple answer. And you know getting it [developmental trauma disorder] in the DSM-5 would have been– that would have introduced some research and– but, just, the world is not ready.... for these things. You know, we are limited, we don't have a lot of numbers, also we don't have a lot of

		money. Um, but yeah, things can happen here... And like one of the NMT groups in Australia, they have nine or 13 researchers and they're open and hired by the government. So I do think it's [NMT] getting out there." (Participant 5)
	New and qualitative approach (N = 1)	"I think, one, because it's newer. It's sort of hard to research new stuff, just time-wise. And two, it is hard to measure because it's more a qualitative than a quantitative thing... Yeah, it's [NMT] not straightforward." (Participant 6)
	Tailored approach, supported by clinicians (N = 1)	"So my guess is the reason it's not researched is because it's a very... qualitative, individualized, unique, creative, part of the world. And so the people who are so invested in it are probably not researchers. And you know so I think unfortunately people have been very busy doing the work and are not necessarily the same people that are going to research it." (Participant 3)
10. Training in NMT and developmental trauma (N = 7)	Providing trainings (N = 5)	"We are using it [NMT] as a training tool, when we go around the community, state wide really, and train people about developmental trauma. Typically we have two to three or six hour day. We have a standard training of NMT, and we teach developmental trauma through the influences of impact. We talk about attachment and bonding, we talk about early development, emotional regulation, cognition and learning, and behavior, in the time we have, 10 minutes or an hour... We do a lot of work with schools, so we have one tailored for schools, one for mental health, one tailored for

DCF... We show a lot of Dr. Perry's work. We show ARC stuff, van der Kolk stuff." (Participant 2)

"We are doing developmental trauma trainings in the big world, and that is everywhere really. Schools, DCF, um, parents' groups, foster parents' groups, really everywhere. And then internally to our own people... And I do the regular, every round now, I do developmental trauma with DCF workers. Like it's part of their curriculum... They are responsive to it, they are... We have a contract with DCF to do trauma evals. We're --and it's very hard to break into DCF, the model, so I feel like NMT really sold them on it... we don't train [only] in NMT. We were doing trainings on developmental trauma just in general... So I think we're probably going to start another cohort of people, to be the next group of trainers [who would train staff in NMT]. Um, so we're working on that..." (Participant 5)

"Also, the psycho-education tools that have been offered to us in the [NMT] project have been like nothing I've ever had at my fingertips before... I can walk into a findings meeting for a report and present these slides that are just brilliantly done and it really enhances the team's understanding of, for example, a child's ability to establish intimacy or barriers to intimacy, you know, the impact of neglect on the child's sense of the care-giving system... That's part of our implementation plan for the next year is to pull more people into training... We actually have had

	requests from folks outside of our agency to train them up" (Participant 4)
	"Every so often in staff meeting we'll talk about it; we have new staff come in and we'll educate them." (Participant 6)
	"And then I've provided my staff with periodic training." (Participant 1)
Receiving training in NMT (N = 3)	"The majority of my staff team went to Bruce's conference, and every time he has tried to get our whole team, or as much of us as can up there. So I have attended all the course consultations that we do, which, for the first couple of years, were more us passively listening live through the internet to stuff that he [Bruce] did, and occasionally presenting cases. And that shifted to more regular presentation of our own cases, to us consulting on our own on cases." (Participant 1)
	"Um, yeah, and we need to train a lot. We need a lot more training. There's not enough people yet out there kind of trained to do the work... So now I really understand how developmental trauma can really explain all the symptoms. Even ADHD is not necessary. And I can write out something to defend that, with this training." (Participant 3)
	"There's the more formalized trainings we do, and then in our weekly staff meeting... We did a couple of retreat days where we sort of went through a PowerPoint thing. Initially, it was definitely sort of abstract and like, whoo. I would sit

		in on the Bruce Perry stuff and listen to these case studies... There's just a lack of conferences that fit in." (Participant 6)
	Effects of training (N = 1)	"So as a state system of care, this idea of developmental trauma is really becoming ingrained. And you know there's been some state documents released recently about needs in the system of care, and the words trauma-informed were in there. It is exciting. So it feels like we're making huge inroads." (Participant 5)
	Validation through training (N = 1)	"I kind of had this idea that I could never really do the work unless you get how the brain works... And with education comes more validation. So my understanding of brain function regarding decision-making and relationships helped me make sense of it all. Making sense of it all, I think that is where it is really helpful." (Participant 7)
	Not receiving enough training (N = 1)	"I think graduate school programs need to be doing a lot more. The only reason I was ever really aware of it [NMT and developmental trauma] was at practicum during graduate school." (Participant 7)
11. Relationships and NMT (N = 6)	Healing in relationships (N = 4)	"It is in human relationships that we develop, in whatever direction, it is only within healthy human relationships that we can function well, and it is only within healthy human relationships that we can get healthier." (Participant 1)
		"You are helping his [the client's] brain build connection, you're giving

	him relationships- that's the part that is really important." (Participant 3)
	"And this is another place where NMT has really shifted my thinking; it just makes sense, it does take a village. And the more hits of consistent, predictable, nurturing contact with an adult where you're being looked in the eye and touched on the shoulder and made to feel important, the better - the more opportunity it will be for that to take hold in your psyche, in your sense of self." (Participant 4)
	"I don't know, I just think there is something about that human connection... it goes back to that one consistent thing– I feel like those moments are where it [healing] happens." (Participant 7)
The overlooked relational piece of NMT (N = 1)	"I mean, yes, that is part of the NMT model that I think doesn't get talked about as much. But you know, relational health and examining that is a huge part of the Metric, and the conversation and the intervention and, um, is a predictor of how well these kids are going to do. Where they are at, and how well they're going to do. It is a huge piece of it and so we talk about it a lot... But we're connecting with whoever, you know, the guy who owns the bike shop, past coaches, foster parents, you know, anything we can pull out of the wood work." (Participant 5)
Lack of good attachment (N = 1)	"Most of the kids I work with don't really have good attachments to their parents. We have to sort that out." (Participant 2)

12. Learning to use NMT (N = 4)	Difficult to learn (N = 2)	"I think one of the primary reasons it's been stressful is that they were defining themselves as a commodity at that time and they really didn't - as with anything that's evolving rapidly that people are getting excited about –they were learning as they went as well. So there were some communications glitches along the way. It's been a lot of extra time outside of our work schedules. You know, reading seven articles and doing a fidelity exercise and talking among ourselves about how we're going to infiltrate the agency with this information; it's been a lot..." (Participant 4)
		"I should have a masters in it! (laughs)" (Participant 5) "In NMT (laughs)" (Interviewer) "I really honestly should! We all feel that way!" (Participant 5)
	Ultimately positive (N = 2)	"Yeah... Um, it's been a lot of things, I'd say. Fun, um, (pauses)... So it's been fun and in another way, part of the fun is that I feel smarter, learn stuff... overall, pretty invigorating for the most part." (Participant 5)
		"It took us many attempts that didn't end up working out in order to eventually figure out how can we make this a very regular part of the work. And you know we will continue to learn about that, but I think we have arrived at that fairly well... I think a part of our understanding that has grown over time is that we've needed to be intentional in trying to average out more interventions at the developmentally necessary level... I think it has been an exciting kind of

		trial and error process for us." (Participant 1)
	Validation (N = 1)	"Before we knew anything about NMT, we were doing a lot of what NMT would want us to do... And so what happened as we learned more and more about NMT is we understood why some of what we were doing was working, and we endorsed it... I think back to what would I have done with that 10 years ago and I think I would have done a decent job but I don't think I would have been equipped with the level of confidence and information that I have now" (Participant 3)
13. Tailoring NMT (N = 4)	Trial and error (N = 2)	"I think some of it is– I would put it in the category of good caregiving and good therapy. How does a parent know to put their kid in soccer or field hockey? Some of it is temperamental, like what matches that kid's temperament. And some of it is trial and error experimentation. And the age of the kid." (Participant 2)
		"So it really is crafted toward the needs of the child... I'll play around with techniques in my office... So it's somewhat about trial and error and just playing around in my office with what feels most comfortable." (Participant 4)
	Possible treatment options (N = 2)	"Magic, fitness, animal stuff, yoga. You know, individual stuff. We ask schools to do stuff if kids are on IEPs. You have some parents who are resourced enough that they can provide some of that stuff. And some of it– it's not all resources. You can be pretty creative."

		(Participant 5) "Yoga, running, walking... A couple of the kids are into music so we have musical instruments; we have keyboards, we have drums, we have guitars. A couple of people rock climb. Aikido is something a couple of folks have been involved in. We do a lot of cooking from time to time... We do art projects and a lot of these guys are really very artistically inclined... Some of the kids are better at writing and enjoy writing more... We have some dogs that come in... So it's a whole range we have... It works pretty seamlessly for us." (Participant 6)
14. Collaborators (N = 5)	Other practitioners (N = 1)	"So we are doing a lot of work with new body-based people, practitioners, yoga instructors... We are sending a number of kids and families there for body-work... They really need to do much more work on lower brain stuff, they are not ready for verbal stuff... [there are] two very creative programs locally that do a combination of things. One of them does equine therapy, and animal-assisted therapy, the other does yoga, martial arts. We get lots of good results from kids going there, doing those things." (Participant 2)
	Clients' family (N = 1)	"It's all you, the parents, the coaches, the teachers, the neighbors, the grandparents, it's not me, a therapist in an office, it's all you all day every day... I am the facilitator. Developing a web of care and people." (Participant 3)

Partnerships (N = 1)	"We've developed a couple of really good partnerships, really strong legal advocates throughout the state... [Also] schools, DCF... a wide net..." (Participant 2)
Schools (N = 1)	"And sometimes it's like when you're talking to schools and you're giving recommendations that are just outside their limits, then you got to say– if they're really smart, they'll figure out how to get the kid what he needs." (Participant 7)
Wanting to increase collaboration (N = 1)	"What I would really like is more blending of the worlds, a way for us to find out how to fund the collaboration between, for example, occupational therapy and sensory integration experts with my world, and massage therapists and yoga therapists with my world... we haven't figured it out [yet]." (Participant 4)